

# Regional Approaches and Tools for Sustainable Revitalization

Documentation of a Workshop of the U.S.-German Bilateral Working Group, May 8 and 9, 2008 - New York, New York



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This brochure documents the workshop “Regional Approaches and Tools for Sustainable Revitalization” on May 8 and 9, 2008 - New York, New York in the framework of Phase 4 of the U.S.-German Bilateral Working Group, sponsored by the German Federal Ministry for Education and Research (BMBF) and the U.S. Environmental Protection Agency (U.S. EPA).

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Forschungszentrum Jülich GmbH

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Maike Hauschild

Zimmerstr. 26–27

D-10969 Berlin

Phone: +49 (0)30/20199-454

Fax: +49 (0)30/20199-430

email: m.hauschild@fz-juelich.de

Internet: www.fz-juelich.de/ptj/

#### **In cooperation with**

USEPA, Office of Research and Development

Ann Vega

26 W. Martin Luther King Dr.

Cincinnati, OH 45268

Phone: +1 513/569-7635

Fax: +1 513/569-7676

email: vega.ann@epa.gov

Internet: www.epa.gov

#### **Editorial Team**

Maike Hauschild (PtJ), Ann Vega (U.S. EPA), Stephanie Bock (Difu), Gregor Jekel (Difu), Verle Hansen (U.S. EPA), Sue Schock (U.S. EPA), Al Venosa (U.S. EPA)

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# Regional Approaches and Tools for Sustainable Revitalization

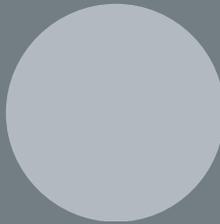
**Documentation of a Workshop of the U.S.-German Bilateral Working Group,  
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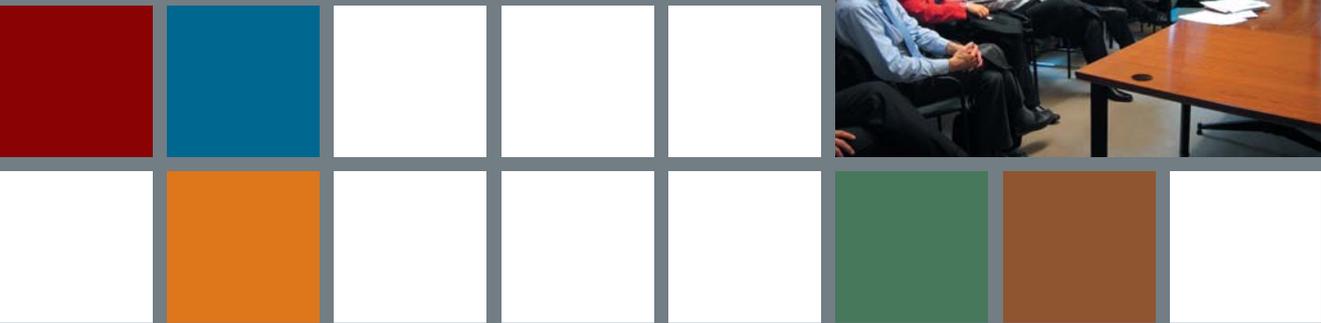
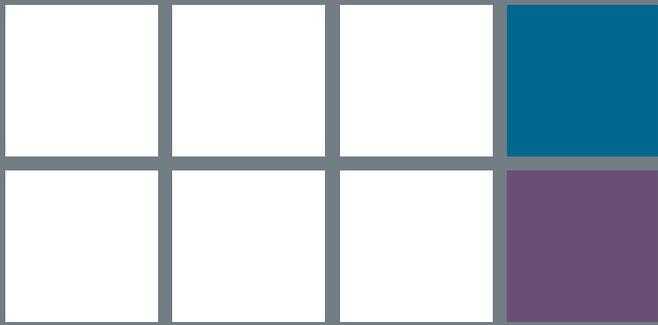
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# 1 Introduction



Organizing Team



## Overview

There is growing international recognition that revitalization of regions containing potentially contaminated sites to meet economic, environmental/ecological, and social/cultural demands can and should contribute to the sustainability of the human and natural environment by improving environmental quality and sustaining ecosystem integrity. Sustainable regional revitalization seeks to incorporate a balance of social, economic, and environmental interests and objectives into growing and developing communities as well as shrinking cities. Achieving this balance is increasingly important in the cleanup and revitalization of regions incorporating sites with real or perceived contamination, since many of these areas are not meeting their full economic, environmental/ecological, or social/cultural potential.

In order to encourage regional revitalization that balances social, environmental, and economic sustainability, it is important that local communities have access to practical strategies and tools to match best practices to local conditions and achieve the right balance for the particular region. The U.S.-German Bilateral Working Group, the U.S. Environmental Protection Agency (EPA), and the German Federal Ministry for Education and Research (BMBF) sponsored this workshop to share information and approaches developed in both countries. This workshop was the first in a series of workshops planned for this Bilateral Working Group's focus on regional revitalization. The intent of this collaboration is to form strategies and tools that can be disseminated to local communities and other revitalization practitioners to facilitate sustainable regional revitaliza-

tion. The presented approaches from Germany are developed by research projects within BMBF's REFINA research program (<http://www.refina-info.de/en/>) through which the dissemination will also occur. In the U.S., this dissemination will occur through the Sustainable Management Approaches and Revitalization Tools - electronic website ([www.smart.org](http://www.smart.org)).

## Workshop Goal and General Outline

The focus of the 2-day workshop was on international sharing of information on four primary topics: Regional Infrastructure and Trans-boundary Management, Financial Management, Brownscape Design, and Cross-Cutting Regional Planning. The overall purpose of the workshop was to share current information from Germany and the United States on key elements of research results, successful implementation, references and models, prioritization criteria, tools, processes, and approaches for determining reuse of individual sites in the context of the larger, overall region. The format of the workshop consisted of presentations from the perspective of each country on each of the four topics followed by a facilitated discussion on the presented material and associated information.

The Case Descriptions, which follow in Sections 2-5, provide a description of the tools and approaches presented at the workshop for each of the 4 topics. At the end of each topical section, the Discussion and Conclusion summarizes the facilitated discussion for that topic. Section 6 identifies workshop outcomes and next steps of the US-German Bilateral Working Group.



*Workshop Participants*

## Programme Regional Approaches and Tools for Sustainable Revitalization Workshop

| May 8, 2008 |  |
|-------------|--|
| Time        | Topic  |
| 8:00        | Introduction   |
|             | <b>RITM – Regional Infrastructure and Trans-boundary Management<br/>Cooperative Implementation of Regional Plans</b>   |
| 8:30        | Lyle Wray (Capital Region Council of Governments, Hartford, CT) and David Kooris (Connecticut Office, Regional Plan Association):<br>Case description U.S.: Greater New York Metropolitan Region |
| 9:15        | Hans-Peter Klein (LEG Saar):<br>Case description Germany: Saarland's Balanced Land-use Concept   |
| 10:00       | Break  |
| 10:30       | Discussion - Document key elements of successful implementation; comparable factors and differences between the U.S. and Germany; next steps; products   |
| 12:00       | Lunch  |
|             | <b>Financial Management – Shadow Effect</b>  |
| 1:30        | Reimund Schwarze (Helmholtz-Zentrum für Umweltforschung GmbH - UFZ):<br>Mercantile Value Reduction: Accounting for Stigma on Contaminated Land in Germany  |
| 2:15        | Stan McMillen (Department of Economic and Community Development [CT]):<br>Financial Management Case description US: Regional Economic Models Inc. (REMI) model                                   |
| 3:00        | Break  |
| 3:30        | Discussion - Document references and examples of models, examples and approach elements; comparable factors and differences between the U.S. and Germany; next steps; products                   |
| 5:00        | Site Tour  |
| 6:00        | Dinner   |

| May 9, 2008 |   |
|-------------|---|
| Time        | Topic   |
|             | <b>Brownscape Design</b>  |
| 8:30        | Rebekka Gessler (TU Muenchen):<br>Case Description Germany/U.S.: Westerholt, Germany  |
| 9:00        | Doug MacCourt (Ater Wynne):<br>Case Description Germany/U.S.: The Dalles, Oregon, U.S.  |
| 9:30        | Victor Ketellapper (EPA):<br>Case Description U.S.: Breckenridge, Colorado, U.S.  |
| 10:00       | Break   |
| 10:30       | Discussion - Document criteria, tools, and process elements; comparable factors and differences between the U.S. and Germany; next steps; products  |
| 12:00       | Lunch   |
|             | <b>Cross-Cutting – Regional Planning Criteria for Site Prioritization</b>   |
| 1:30        | Uwe Ferber (Ferber, Grauman und Partner)<br>Cost-effective reclamation and maintenance of Brownfield sites (KOSAR)<br><br>Martin Bittens (Helmholtz-Zentrum für Umweltforschung GmbH - UFZ)<br>Strategies for the Revitalization of Brownfield Areas in the Larger Potsdam Region |
| 2:15        | Tom DeSantis (City of Niagara, NY):<br>Case Description U.S.: Niagara Region<br><br>Verle Hansen (EPA)<br>Cross Cutting Case Description U.S.: Stella, Missouri   |
| 3:00        | Break   |
| 3:30        | Discussion - Document criteria and approach ideas; comparable factors and differences between the U.S. and Germany; next steps; products  |
| 5:00        | Team Leader Reports   |
| 6:00        | Closing Remarks   |

# Regional Infrastructure and Trans-boundary Management



## 2.1 Regional Infrastructure and Trans-boundary Management Case Description U.S.: Greater New York Metropolitan Region and Minneapolis-Saint Paul Minnesota Metropolitan Area

*Lyle Wray and David Kooris*

### Regional Planning Through Research, Advocacy and Demonstration

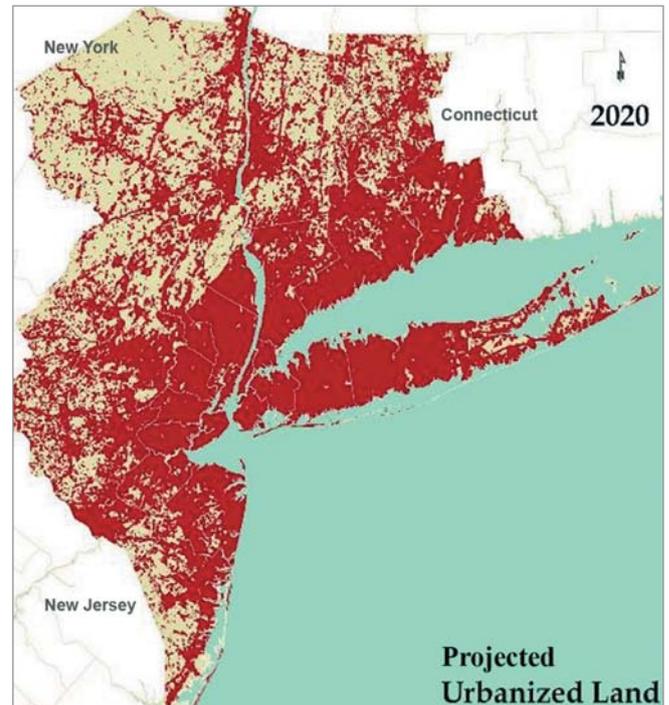
Regional Plan Association (RPA) is a unique organization dedicated to the competitiveness and quality of life of the greater New York metropolitan region, and it is the only non-governmental entity that looks at the metropolitan region in its entirety. Established in the early 1920s, RPA is the nation's oldest regional planning organization and has, since then, improved spatial development in the tri-state region through research, advocacy, and on-the-ground demonstration projects. Covering portions of 3 states including 31 counties and over 750 municipalities, RPA has created three regional plans that have outlined the challenges of and a strategy for continued equitable and environmentally sensitive growth for the region.



*RPA Research, Advocacy, and Case Studies Work to Enhance Competitiveness and Quality of Life*

Over the past several decades, growth trends in the region have been more spatially dispersed and automobile dependent, threatening the long-term competitiveness and livability of the region by shackling future generations to fuel consumptive land use patterns and a degraded legacy of environmental quality, open spaces, and commu-

nity character. Spatial growth projections for the Tri-State Region predict that, given current zoning regulations and development trends, much of the open space and green infrastructure of the region will be lost to suburbanization, often at the expense of the region's constellation of historic town and village centers. Development has become increasingly land consumptive over time. While the average land consumption before 1986 in the state of New Jersey increased by 0.16 acres per capita, between 1986 and 1995 it had reached a staggering 0.48 acres. These development trends are clearly unsustainable and will, over time, destroy the quality of life in the region.

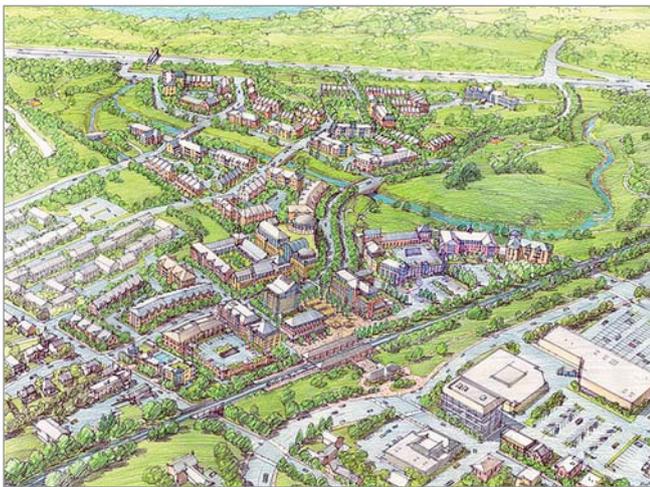


*Spatial Growth Projections for the New York Metropolitan Region Demonstrate Potential for Sprawl*

In an effort to combat these trends, RPA research and advocacy focus on strategies for balancing economic growth with social equity and environmental preservation. Paramount to this goal is the provision of alternative mobility choices to the automobile and development that is pedestrian- and transit-oriented. Recently, funding was secured for a series of system-shaping transit improvement projects that will result in the seamless integration of the region's presently disparate commuter rail services. With a fully integrated network of transit options, approximately five hundred commuter rail station areas have the combined capacity to accommodate a commanding share of the region's growth through redevelopment and infill.

## Somerville, NJ

Recent work in one such community – Somerville, NJ – demonstrates the potential for brownfield redevelopment through a robust participatory process. Over the course of 18 months, RPA staff worked with key stakeholders and the community at large to craft a plan for the reuse of 120 acres that housed a former municipal landfill and rail support properties. Initial community needs included active and passive recreation with little or no private structures. The public process began with a series of lectures covering mixed-use development, transit-friendly communities, walkability, the myths of density and other topics to educate local stakeholders on important planning issues. After a robust and informed discussion on these topics and formulation of a community vision, focus shifted to land use options for the site. Paramount to the eventual success was the clear articulation of the market realities and fiscal implications of various development types. A transparent dialogue that explored the totality of site preparation and amenity costs coupled with local precedents to demonstrate the fiscal realities of compact, transit-oriented development resulted in a plan that combined 1,200 mixed housing units, retail, office, passive, and active recreation in a complete community.



*Aerial Rendering of the Somerville Station Area Village Resulting from Public Planning Process*

## Regional Redevelopment in the Minneapolis-Saint Paul Minnesota Metropolitan Area

Over the past 30 years since the creation of the regional government in the form of the Metropolitan Council in 1967 a number of programs and policies have been established to redirect growth to developed areas. The success of the region in building a high quality of life is in large part dependent on a large portfolio of such measures from major infrastructure investments in transportation and transit, upgrading housing stock, an extensive regional park and trail system, and financial tax base sharing to name a few.

In 1970 the Metropolitan Fiscal Disparities Law was passed that placed 40% of all new commercial and industrial tax base into a shared pool for the region as a whole with the intent of discouraging green field development and of compressing the range of resources available to more and less affluent towns. This program has reduced the ratio from about 16 to 1 to 4 to 1 for the most to least resources per community. In 1996 the Metropolitan Livable Communities Act was passed covering the seven-county metropolitan area that put in place grants, now in excess of \$150 million awarded, to encourage transit-oriented, mixed use, mixed income housing in the developed area with funds for brownfield remediation and affordable housing in addition. This has “jump started” transit oriented development so that when the first light rail line joined downtown Minneapolis with the airport and Mall of America, communities were positioned to take advantage of the opportunity to add more than 5000 units of housing along the transit corridor in less than 5 years. In addition to these two laws, substantial foundation and corporate funding has been made available for affordable housing development and for community design improvements through several regional design resources. The core conclusion is that a fairly extensive portfolio of redevelopment mechanisms operating in a cumulative fashion over a 30 year period has complemented a series of efforts such as regional park and trail systems, stringent environmental measures, and substantial state aid to communities (78 percent of local school funding comes from state sources) to yield a high quality of life region.

## 2.2. Regional Infrastructure and Trans-boundary Management Case Description Germany: Saarland's Balanced Land-use Concept

*Hans-Peter Klein*

### Saarland Demographic Situation

The state of Saarland is the smallest of the 16 German states and borders two neighboring countries: France and Luxembourg. The area size is about 2.5 square kilometers and the population amounts to about 1 million. After the decline of the coal mining and steel factories in the late 1960s, the biggest challenge that the Saarland has to face is the projected change of the age pattern. The Saarland is expected to lose about 30 % of its population by the year 2050. So the decrease in population and the increase of the average age is resulting in a change in age-pattern, which will have a strong influence on the land use in the future. Examples of affected sectors include: land-management, public utilities, public transportation, schools, and residential housing for elderly people. The government of the Saarland has reacted to this situation and has realized that it is of key-importance to actively manage the demographic change. The state action plan is the "Saarland agenda", which describes general goals for the future development of the society. An inter-department committee "Demographic change" has been established in the state government, and the first status report on the issue has been compiled.

### Balanced Land Use Concept

The concept for balanced land use should avoid increased land development and limit the net footprint of communities. Natural open spaces should be preserved and restored as far as possible to their natural functions. This comprises reuse of brownfields for economical, residential or landscape restoring development and allows development of greenfield land where it is sustainable and appropriate. This is considered necessary to match the changing requirements of industry and business for the location and the shape of their spaces in the future. Because not every requirement of industry and business can be met by re-using brownfields, new greenfield developments should still be possible but minimized by recovering space that was used for prior settlements and restoring those to open spaces.

### The Goal

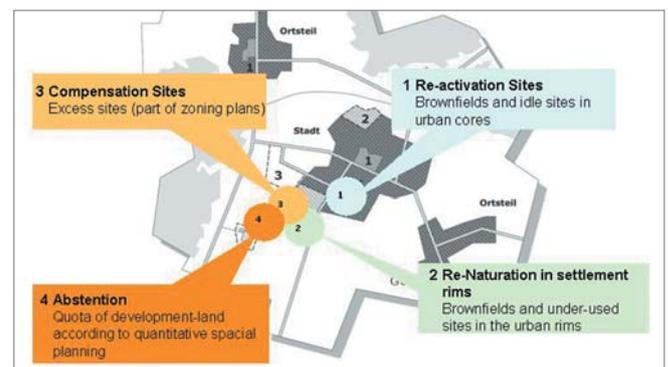
The Goal of the balanced land-use concept for Saarland is to level out new greenfield developments with recovering open spaces in areas that have been developed before and are not needed anymore. The main driver of this activity will be a voluntary participation of communities in a funding program that targets strengthening the urban cores of villages and towns by co-funding public grants, which are combined with the requirement to recover open spaces at the rims of the communities.

### The Cornerstones

The cornerstones of the concept are to focus on re-activating the functionality of urban cores by granting redevelopment of urban sites and to include all brownfields whether publicly or privately owned. It requires recovering the same size of land for open space as is lost by development. It will be of crucial importance for achieving the goals of zero growth to grant smart shrinking with financial aids for inner-core redevelopment. That means that economic incentives are given to re-develop urban cores instead of developing rims, while hoping to attract people or businesses. The main measures to gain acceptance are the voluntary participation of municipalities in the program and its congruence with existing granting programs. This new concept is therefore part of an existing funding mechanism, and it still allows new development, if it is compensated.

### Suggested Measures

To promote the desired qualitative growth, a greenfield development fee will make it costly to waste space, and municipalities will be required to conduct cost-benefit-analyses for their intended greenfield developments. This allows them to identify the risks that might accompany these plans.



Four different types of sites

- Type 1 sites are the well-known inner-urban brownfields.
- Type 2 sites are typical sites that are fallow because urban sprawl of the past has to be managed or repaired today.
- Type 3 sites are compensation sites that are already part of a building plan but are not needed due to a lack of demand on the land market. They should be converted back to open space.
- Type 4 abstention-sites may be a German specialty due to prior land development plans that gave a special quota to the municipalities with the right to develop that land. In many cases, however, these quota are not needed due to a lack of demand.

## 2.3 Regional Infrastructure and Trans-boundary Management: Discussion and Conclusion

*Gary Riley*

Three presenters addressed the “Regional Infrastructure and Trans-boundary Management” theme at the BWG Workshop. Lyle Wray, Executive Director of the Capital Region Council of Governments, discussed “Cooperative Implementation of Regional Plans: Toolkits for Sustainable Revitalization – Regional Tax Base Sharing and Beyond.” David Kooris, Connecticut Director for the Regional Plan Association, presented “Voluntary Implementation of Regional Plan through Participatory Planning”. Hans-Peter Klein, Saarland Planning and Construction Corporation, presented the “Saarland’s Balanced Land-use Concept” of the German Federal State of Saarland.

The participatory planning process described by Mr. Kooris’ presentation showed a successful example of how his organization is working through voluntary means to direct growth to the urban centers of the three-state region covered by RPA. Lyle Wray described the Fiscal Disparities Law enacted in Minnesota to address problems associated with using land use planning and development to encourage revenue production. Hans-Peter Klein explained the innovative Balanced Land-use Concept, which should contribute in the Saarland to level out new greenfield developments with recovering open spaces in areas that have been developed before and are not needed anymore.

The facilitated discussion opened with a comparison of the differences between the U.S. and German approaches to regional planning. Participants identified a significant gap between planning at the site level and the regional level in the U.S. Current planning policies in the U.S. seem to favor consumption of green space, while those in Germany do not. Other factors that affect growth in the two countries, such as population change and aging, were noted to have effects on needs in each country.

Participants noted that the case studies, as well as their own experiences, have shown successful regional planning can occur with the right elements. These included strong enforcement from a municipal or state government, proven incentives to reduce sprawl, revenue sharing among jurisdictions, and strong political leadership with stakeholder involvement.

A number of competing factors were discussed that can affect the ability of regions to plan for growth, particularly those in the U.S; however, these factors can impact planning in both countries. It is a challenge in either country to effectively value ecosystem services, which can make it difficult to include them in the planning analysis. Individual municipalities vary in their population and business section

growth (or shrinkage), and this may impact local leaders’ motivation to participate in voluntary regional planning. In the U.S., cities make much of their revenue from tax policies that encourage retail and business development at the expense of housing and civic amenities. This situation was described as less of a factor in Germany.

The group identified a number of tools and specific approaches that can help foster planning at the regional level in Germany and the U.S. The planning process should be adjusted to include formalized steps between the individual site and the region as a whole. The tax code in the U.S. could be amended to remove incentives for sprawl and competition among local municipalities. Along those lines, it is also necessary to create structures at the regional and national levels to identify problems and recommend solutions.

Perhaps one of the largest topics of discussion was how to inform citizens and other stakeholders about the long-term benefits and costs of specific planning decisions. In particular, it is important to measure on-site, off-site, and regional impacts in a manner that people can understand. This is a way to assist communities in aligning their perceptions of growth with regional goals. The discussion focused on the question how to guide the local and regional discussion process, before the official planning and approving procedure by the local (or regional) authorities starts. In order to convince more people, it seems to be advisable to show great concern for environmental issues, that is, e.g., to pay some additional money for some ecologic and aesthetic improvement on the site, in the vicinity of the site or elsewhere. From this point of view, the official procedures and their legal framework don’t seem to be the most important item, once the majority of local and regional decision makers (and the EPA) has been convinced.

The discussion ended with identification of methods to transfer ideas and provide next steps. The recurrent theme through the discussion was how to communicate the benefits of regional planning to the community as a whole. Use of non-technical language and demonstrated benefits and costs was suggested as a way to help stakeholders understand the regional planning context. Practitioners from both countries discussed the importance of clear, plain-language communication to increase community involvement. The participants also recommended a test project in the U.S. to apply the success of a REFINA project in Germany. The best site for such a test would be one with a similar context to a project in Germany to allow for comparison of the outcomes.

In the next step team members would like to understand and document the framework that is guiding decision-making in Regional Planning. It might be possible for certain German planning concepts to be replicated in the U.S. The American Planning Association may be able to provide concepts that can be replicated in Germany. Another topic could be to generate common ideas that support political leadership.



*Workshop Atmosphere*



# Financial Management



Reimund Schwarze



Stan McMillen

### 3.1 Financial Management Case Description US: Regional Economic Models Inc. (REMI) model

*Stan McMillen*

#### Description of the REMI Model

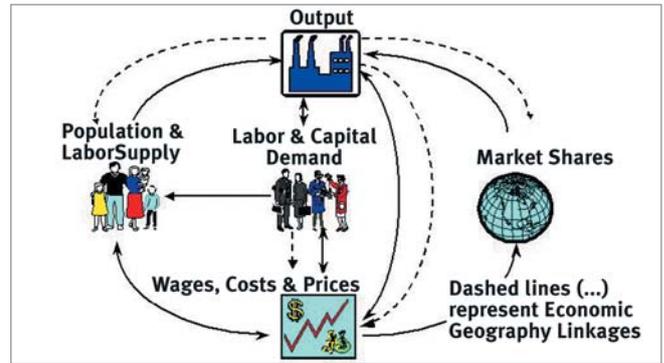
The REMI model is a dynamic, multi-sector, regional model developed and maintained by Regional Economic Models, Inc. of Amherst, Massachusetts. This model provides economic and fiscal detail on an arbitrary collection of U.S. counties. The REMI model includes major inter-industry linkages among 466 private industries, aggregated into 67 major industrial sectors. Including farming and two public sectors (state and local government, and federal government), there are 70 sectors represented in the model (a 169 sector model is also available).

The REMI model is based on a national input-output (I/O) model that the U.S. Department of Commerce (DoC) developed and continues to maintain. Such models focus on the interrelationships among industries and provide information about how changes in specific variables affect factor markets, intermediate goods production, and final goods production and consumption.

The REMI regional model takes the U.S. I/O “table” results and scales them according to traditional regional relationships and current conditions, allowing the relationships to adapt at reasonable rates to changing conditions. REMI is a structural model, meaning that it includes cause-and-effect relationships. The model shares two key underlying assumptions with mainstream economic theory, i.e., households maximize utility and producers maximize profits. In the model, businesses produce goods to sell to other firms, consumers, investors, governments and purchasers outside the region. Industry output is produced using labor, capital, fuel, and intermediate inputs. The demand for labor, capital, and fuel per unit output depends on their relative costs because an increase in the price of one of these inputs leads to substitution away from that input to other inputs. The supply of labor in the model depends on population size and labor force participation. Economic migration affects population size and its growth rate. People move into an area if the real after-tax wage rates or the likelihood of being employed increases in a region.

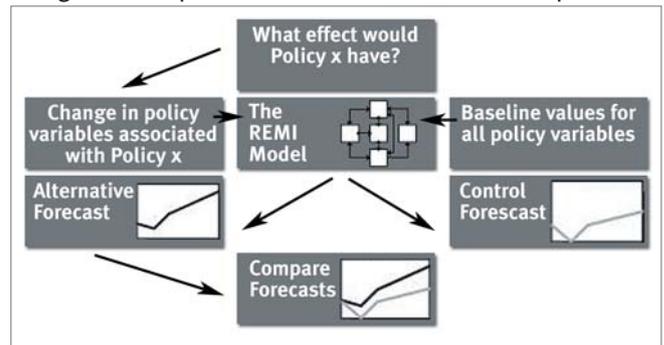
The supply of and demand for labor in the model determine the real wage rate. The wage rate, along with other prices and productivity, determine the cost of doing business for each industry in the model. An increase in the cost of doing business causes either an increase in price or a cut in profits, depending on the market supplied by local firms. This market share combined with the demand described above determines the amount of local output. The model has other feedbacks. For example, changes in wages and employment impact income and consumption, while economic expansion changes investment and population growth impacts government spending.

conomic expansion changes investment and population growth impacts government spending.



REMI model structure

The Figure above is a pictorial representation of the REMI model. The Output block shows a factory that sells to all sectors of final demand as well as to other industries. The Labor and Capital Demand block shows how labor and capital requirements depend on both output and their relative costs. Population and Labor Supply contribute to demand and to wage determination in the product and labor market. The feedback from this market shows that economic migrants respond to labor market conditions. Demand and supply interact in the wage, price, and profit block. Once prices and profits are established, they determine market shares, which, along with components of demand, determine output.



REMI policy analysis strategy

The second figure illustrates the strategy to obtain a forecast of the results of a shock to the regional economy. The model contains a baseline (control) forecast of the regional economy; the shock produces changes that ripple through the region and beyond producing an alternative forecast. The effect of the shock is the difference between the two forecasts.

Additional information can be found at: <http://www.remi.com/>.

## 3.2 Financial Management Case Description Germany: Mercantile Value Reduction: Accounting for Stigma on Contaminated Land in Germany - Results from REFINA project SINBRA

*Reimund Schwarze, Stephan Bartke*

### Overview

The clean-up and re-use of contaminated land is a risky endeavor. The clean-up may be incomplete so that some pollution goes undetected. Some pollutants in the ground may be unknown at the time of the clean-up process but surface later on. Areas may be completely clean but yet suffer a depressed market value because of 'stigma', i.e. the psychological fear that some negative impact or remaining cost may appear even though a proper site clean-up had been conducted. The stigma on contaminated land has been widely debated in the United States but received little scholarly attention in Europe – despite the fact that accounting for stigma is a legally approved best practice of appraisal in most European countries. This paper surveys the German approach for the accounting of stigma on contaminated land and proposes a risk scoring method of accounting based on a survey among German appraisers.

### Mercantile Value Reduction – the German approach to 'stigma'

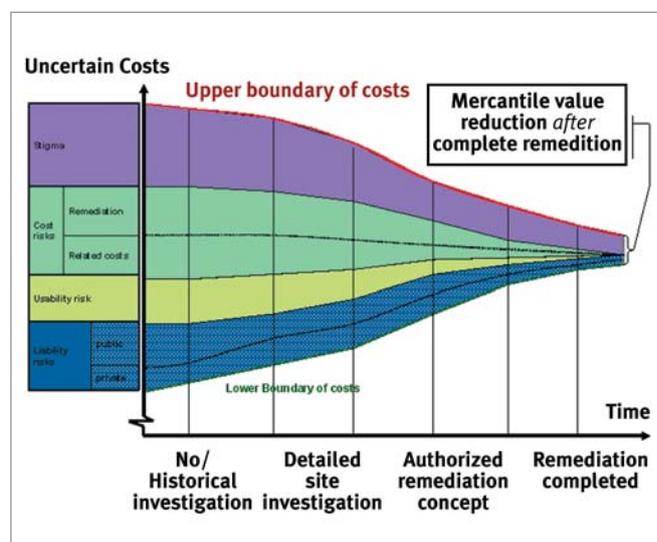
It is a well-established fact from the sales of contaminated land as well as other goods (cars and other long-lasting consumer goods after accident and repair) that a 'stigma' remains even after all damage had been restored. This phobia to purchase assets with a history of contamination may be irrational by any prudent standard of evaluation, but it is a fact of life and a regular feature of the market that appraisers have to consider in their evaluation of any such assets. The German building code is utterly clear on this. It defines the market value of land as "the price that, at the date of appraisal, can be realized under average market conditions, taking into account all legal and actual properties of the land, while discounting any unusual or personal circumstances of the sale". The German Valuation Guidance (WertR), referring to this definition, specifies this with regard to soil contamination in stating that "any negative impact on soil conditions resulting from previous industrial use of a land is a relevant factor to be considered as part of the formal economic appraisal of land" (§5 WertV). Because stigma is a common feature of this market, it is an actual property of the land to be considered. The accounting of stigma therefore should be a standard practice of land appraisal in Germany. For many reasons this is not the case. The overwhelming practice of land appraisal in Germany is in fact to ignore the existence of contamination and any stigma effects by evaluating the land 'as if clean' while simply indicating that this value is overstated given the indication of a history of contamination on the land.

There is much lamenting on this practice of appraisal in Germany. Several attempts have been made to introduce new rules and procedures for the appraisal of contaminated land - with little impact so far. Many efforts have concentrated on the accounting of costs of remediation, including the uncertainties involved in estimating these costs. However, the cost risks due to clean up are only one among several risks in the sales of contaminated land. Other risks are: the costs of clearing of land, potential use restrictions, public and private liabilities, undetected or unknown contaminants, the risk of diminished marketability and, specifically, a depreciating 'stigma' on the land.

An important point is that these risks are usually not insured in Germany. There are very few insurance companies offering contracts to cover undetected liabilities or for capping the costs of clean-up. These insurance policies are hampered by very large transaction costs and high prices. Less than 10 policies have been sold in less than a decade – mostly to overseas firms in take-over actions that involved contaminated land. They are not bought by "normal" buyers or sellers of such properties. As a result all such risks are considered part of the price established between sellers and buyers. Usually they are borne by the seller, resulting in a depreciated value of the asset.

### Mercantile Value Reduction – what and when?

One important step in establishing new practices in land appraisal is to be very clear on what is meant by these risks and when they need to be considered.

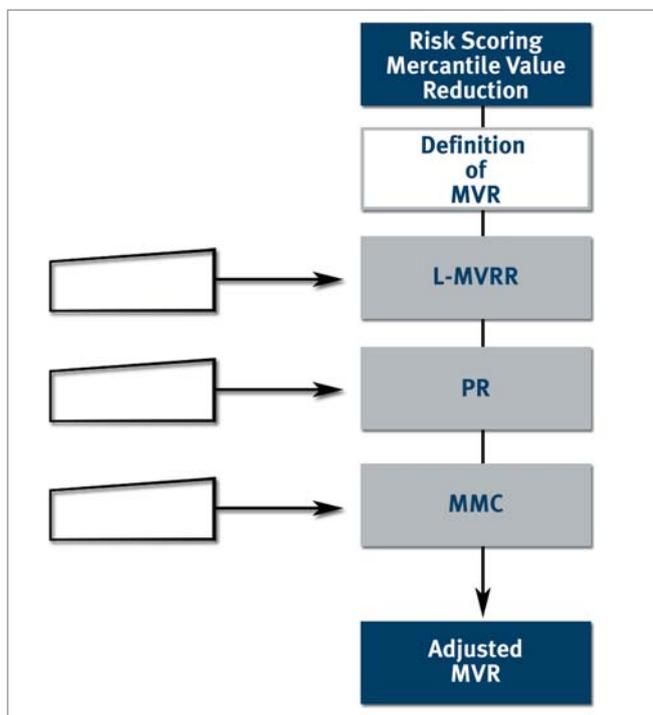


*Mercantile value reduction*

In our approach we distinguish between:

- 1) Liability risks, stemming from private or public claims, that may arise from incomplete clean-up, undetected or unknown contaminants
- 2) Usability risks related to potential use restrictions on the land
- 3) Cost risks associated with remediation and the clearing of the land
- 4) Stigma, understood to be the phobia or irrational fear of negative impacts or remaining costs after a proper site clean-up has been conducted.

Mercantile Value Reduction (MVR) is the sum of any of these perceived risks after remediation, i.e., after all legal stipulations for remediation are fulfilled. MVR is a rational phenomenon, as it is the economic equivalent of these perceived risks. Commonly, the MVR is larger than psychological stigma. But as risks in our view are decreasing during the remediation process (indicated as sequence of the remediation process on the time arrow), the perceived stigma at an early stage of revitalisation planning can be larger than the sum of perceived uncertainties after clean up (MVR).



Risk scoring methodology for Mercantile Value Reduction

The suggested risk scoring methodology for MVR consists of four steps (see figure):

- a) Definition of MVR
- b) Scoring of local MVR risks (L-MVRR), considering factors such as:
  - traceability of the area of (supposed) contamination
  - relative area of (supposed) contamination (> 15 % of total site)
  - confirmed groundwater contamination
  - visible safety measures on site (security fences, barriers, etc.)
  - public authorities stated clean-up demand
  - devotion of the site to private residential use
  - adjacency of the site to a residential neighbourhood
  - media reporting on the site's contamination issues.
- c) Consideration of planning stage associated risks (PR)
- d) Consideration of mitigating market conditions (MMC).

These steps result in an appraisal of adjusted MVR for the local property.

This scoring scheme is supposed to be in line with standardized appraisal procedures and methods used in Germany, and, in addition, could add to existing risk measurement methods of bank and insurance companies. The risk evaluation method is also to be incorporated into the site-oriented integrated management system for decision support of the SINBRA project ([www.sinbra.de](http://www.sinbra.de)).

### Survey basis and results

Currently the risk scoring is based on the results of a questionnaire survey among 90 professional appraisers in Germany. The group was randomly selected from the appraiser's organisation in Germany and asked about the size and factors of MVR. On average, respondents in our survey had work experience of 15 years and dealt with 80 cases annually; only 65% of the group was experienced in appraising contaminated land. Key findings were: MVR lies between 5% - 30%, with the median MVR being assessed at 10% of the market value. MVR degressively declines over a period of 10 years. A majority (61%) of the respondents stated that MVR strongly depends on market conditions. Mercantile Value Reductions, according to this survey, can be eliminated by strong market demand.

This survey data will be validated and re-calibrated with market data from Brandenburgische Boden GmbH – an East German property conversion company - in a repeat of our study.

### 3.3 Financial Management: Discussion and Conclusions

*Peter Meyer, Ann Vega*

Under the Financial Management theme, Reimund Schwarze (Germany) gave a presentation on “Mercantile Value Reduction: Accounting for Stigma on Contaminated Land in Germany.” Professor Schwarze gave an overview of the REFINA project (SINBRA), presented definitions of mercantile value reduction on stigma, discussed German standardized appraisal methods, and demonstrated the process of risk scoring for mercantile value reduction. Stan McMillen (U.S.) gave a presentation on REMI, a regional economic model from Regional Economic Models, Inc. REMI is a dynamic, multi-sector, regional model. It is a structural model based on the circular flows of goods & services and labor & capital.

Because the majority of workshop participants were not economists, we decided that a smaller group meeting was needed to discuss the information presented in addition to the new German Municipal Accounting Approach (NKF) and its associated implications. Stefan Thiel gave an overview of a project on which he is working regarding the NKF. The overview focused on:

- the development of an accounting structure suitable for quantification and controlling of the “real costs” of municipal products and services, to provide the sustaining holistic-economical basis for municipal planning decisions
- Internalization of costs of land-recycling and site development by identification and listing of development and ancillary costs (e.g. loan-interests during construction) as investment costs in the municipal balance
- “real costs”: making gross-economical disadvantages of sprawl visible and showing advantages of town-core development

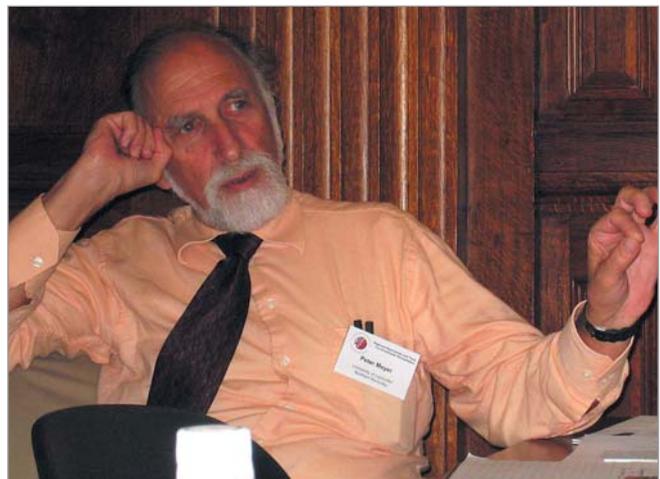
The small group of economists met and summarized the primary financial management issues of regional planning into three main points:

1. Ownership and long-term stewardship. Financial management of regional areas is impacted by clean-up standards and land ownership. Ownership of the land changes over time, and any remediation or mitigation that is done to allow redevelopment (and/or remove stigma) needs to be considered over the long term to make sure the land use remains protective of human health. Free-hold vs. lease-hold controls also can impact the financial aspects of a project. These issues need to be considered and somehow included as factors in any economic development method/procedure/model used.
2. Accounting for – and controlling – stigma. One suggestion was to ensure that more accurate and complete case data are collected. There is a need to create tools for measuring stigma and for resolving disagreements between and among stakeholders.
3. Accounting for and controlling uncertainty as a barrier to financing. There is a need to distinguish between different financing sources and their variable attitudes toward uncertainty. Perception differences of local vs. non-local financing also need to be considered.

At the end of the discussion the Financial Management team members suggested that a collaborative workshop for economists on accounting/uncertainty/stigma would be beneficial and something to pursue. Potential invited guests would include a member of the U.S. Appraisal Institute and the German Appraisal Association. A working title is: Precautionary Principle and Cleanup Standards: Addressing Uncertainty in Pursuit of Sustainability.

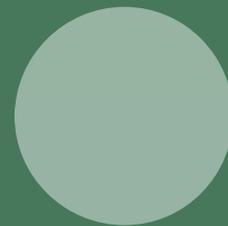


Discussion



# 4

## Brownscape Design



*Matthias Lampert*

*Doug MacCourt*

*Rebekka Gessler*

## 4.1 Brownscape Design Case Description Germany/U.S.: Coalmine Westerholt, Germany and Northwest Aluminum, The Dalles, Oregon, U.S.

*Rebekka Gessler, Matthias Lampert, Doug MacCourt*

### Introduction

The research project titled 'Development of analytical and methodological repertoires to reintegrate Brownfield sites into functional urban areas modeled on examples in Germany and the USA' at the chair of Prof. Peter Latz at the Technical University of Munich is part of an international cooperation between the German Federal Ministry of Education and Research (BMBF) and EPA through the US-German Bilateral Working Group. "Browscape Design – Innovative Configuration of Living Environments" is one of the primary topics of the Bilateral Working Group.

Funding for the research project comes from the German REFINA-program "Research for the reduction of land consumption and for sustainable land management" and contributions from RAG Montan Immobilien GmbH, Northwest Aluminum (NAC), Ater Wynne LLP and EPA.

### Goal and structure of the project

The goal of the research project is the formulation of an analysis and methods repertoire to re-integrate Brownfield sites into functional urban areas. The intention is to avoid the consumption of area on the green site, while also avoiding the fall of the region into a phase of depression – in both cases by new interpretation of these landscapes. Therefore, it is essential to develop transferable planning methods and tools on a scientific level, to describe, simulate, and evaluate them.

The hypotheses of the research project are analyzed in redundant and induced procedures. Therefore, the research project is divided into three blocks. Blocks one and two, summarized below, address the selected study cases:

- Germany: The coal mine in Westerholt
- America: The Northwest Aluminum Smelter, in The Dalles, Oregon.

The results of the two case studies are documented in interim reports. The results of the interim reports are incorporated into a third block. They will be subjected to a systematic abstraction and compiled into a manual. This process will be accompanied by a symposium and will be completed in 2009. In the following paragraphs the focus will be on the Design Charrette - a main component of the two case studies.

### Main hypotheses

The work on the two case studies is guided by the following hypotheses:

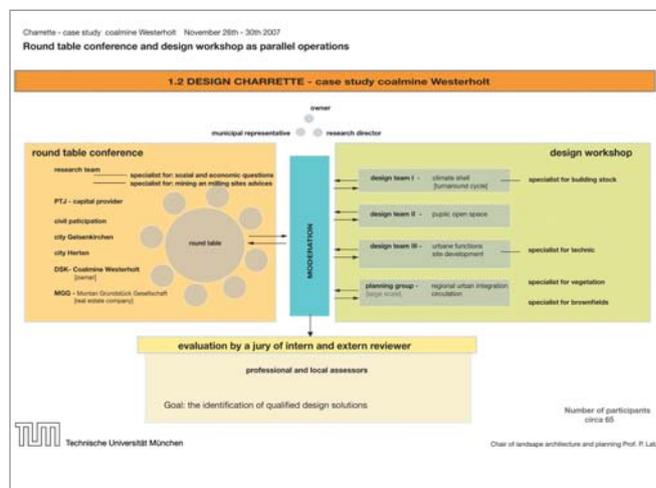
- "The follow-up use of Brownfield sites can be favorably influenced by qualified design arrived at – by collaboration and participation".
- To avoid negative effects it is wise "to start developing qualified design and alternative uses as soon as possible, preferably before the sites are closed down."
- "The re-use and reinterpretation of identity-defining structures is possible and desirable."
- "Establishing interim phases avoids negative effects."
- "The intermediate phases take on their own character and do not necessarily form an integral part of the final product".

### Design Charrette – center of the two case studies

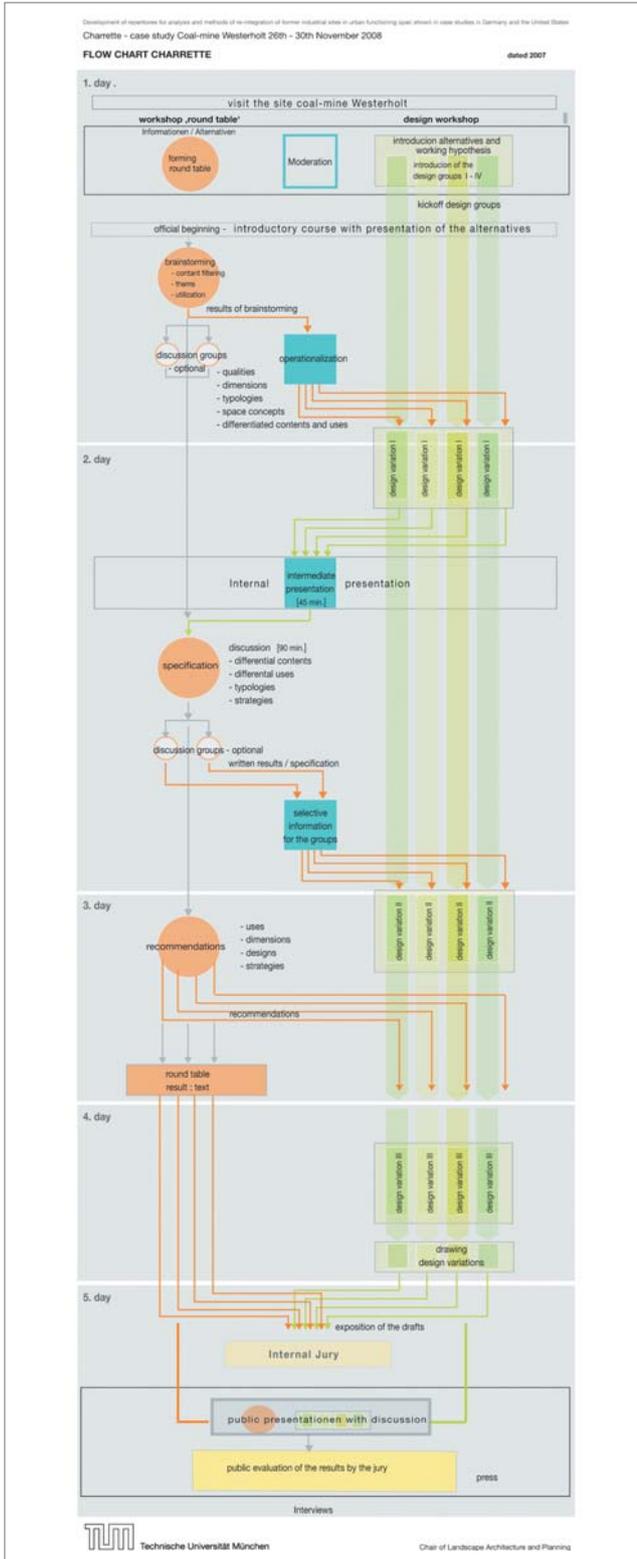
The cornerstones of the chosen method are public participation and design. This is why in both study cases, coalmine Westerholt and Northwest Aluminum, a design Charrette was carried out.

A "Charrette" is an abridged planning process used to solve complex aspects of urban development assignments and involving a strong participatory element. A design Charrette is characterized by:

- Close contextual and spatial rapport
- Participation of all stakeholders and the public
- Collaboration between interest groups and planners
- Identification – this collaboration makes a project, the people's project
- Interdisciplinary teamwork
- Short time span.



Structure of the Design Charrette as developed by the research team



Flow Chart with feedback loops between the 'round table' and the design teams via the moderator

## Structure of the Design Charrette

The Design Charrette consists of two parallel workshops with different tasks and different methods of operation: The 'Round Table' and the Design Workshop. The functional separation, developed by the research team, ensured that each workshop was able to proceed according to its own particular professional techniques. These techniques are comparable to the different "languages" that 'Round Table' participants and designers normally use.

### 1. 'Round Table'

The 'Round Table', comprising the owner, representatives of the city concerned, and local citizens, proceeds to develop programmatic concepts.

### 2. Design Workshop

The Design Workshop is made up of planners from various professions. The interdisciplinary teams draw up their own spatial concepts. Ideas and programs put forward at the 'Round Table' are immediately implemented and incorporated into these spatial concepts at the Design Workshop. The resultant spatial consequences are made visible, so that they can be evaluated and discussed. A series of feedback loops between the 'Round Table' and the design teams are structured to allow information to flow in an iterative process. Any required corrections to the drawings are carried out immediately.

### 3. Moderator

The moderator mediates between the two workshops, guiding communicative processes between the 'Round Table' and the Design Teams, which plays a substantial part in improving the workflow. The moderator fulfills a function like a translator by operationalizing the intermediate results for the respective other workshop.

### 4. Jury

The results of the work executed by the 'Round Table' and the Design Workshop are publicly assessed by a jury. The jury consists of professionals, representatives of the public, the administration, and the owner.

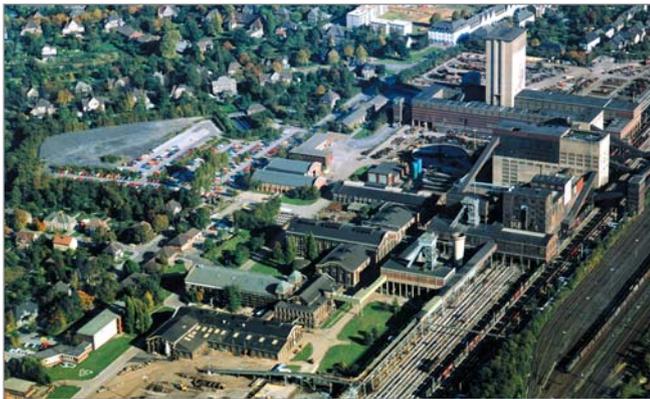
The aim of the assessment procedure is to acquire a number of alternative action concepts, which explains why no scores are awarded. The utilization programs and design concepts are critically assessed and accompanied by a description and evaluation of their respective qualities, after which they will be passed on to future interested parties (property owners and town councils) as a basis for negotiations.

## Case Description Coalmine Westerholt, Germany

### Coalmine Westerholt

Location: The coal-mine Westerholt is located in the Ruhr district. The site is based on the territory of two cities: Herten and Gelsenkirchen.

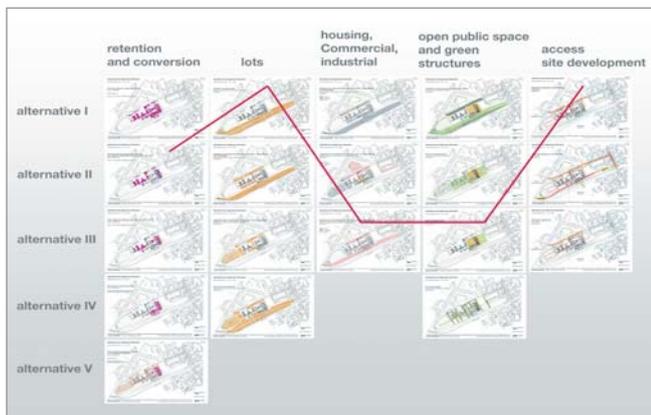
Short description of the site: The coal-mine Westerholt is especially appropriate for the research project as its shut-down was scheduled for the year 2010 and is therefore still outstanding. That means that identity causing structures and elements like the turnaround cycle and the hauling shafts are completely existent.



The aerial photograph shows the surface installation of the coal-mine Westerholt

### Preparation Design Charrette Westerholt

“Don’t start the Design Charrette with a white paper.”- For the quality of the discussions and results of the Design Charrette, it is beneficial to provide a set of pre-structured information. Therefore, general alternatives and constraints were developed based on the site survey.



General alternatives to combine

### 1. General alternatives

Prior to the design Charrette the research group drew up between three and five different spatial alternatives for each of the parameters of relevance to the planning:

- Retention and conversion
- Construction areas
- Housing, services and manufacturing industry
- Integration through public open spaces and strips of greenery
- Accessibility.

Criteria for the description and evaluation of the design alternatives were also developed in this process. The design-alternatives are to be freely connected between the parameters, thus creating many possible combinations.

### 2. Constraints

The amount of possible combinations is narrowed by constraints such as the quality of the existing building structures and contaminations. The constraints were primarily provided by the cooperation partners, the experts from various studios. In the case of the coal-mine Westerholt, the main constraint derives from the contamination by the former coking plant on the site.

### Results – Design Charrette Westerholt

For the future of this site, utilization programs and spatial concepts were generated, aligned with the stakeholders, and assessed by the jury in public. They were documented in a booklet with a description and evaluation of their respective qualities. The booklet is available online to all participants in the process.



Public jury presentation

One major achievement of the Design-Charrette in Westerholt was the decision of both municipalities - Herten and Gelsenkirchen - to jointly develop the site that stretches from one city to the other. Thus, the site was recognized early on as a major planning task. In the case of Westerholt, the simulation conducted at the Design-Charrette evolved to be the basis for the actual planning process - with the

special background of the planned closure of this site by end of 2008 instead of 2010.

### Case Description Northwest Aluminum, The Dalles, Oregon, U.S.

One goal of this case study is developing a comparative understanding between the U.S. and Germany of the methodological process or “repertoire” of Brownscape design on large-scale industrial sites.

Doug MacCourt of Ater Wynne LLP and members of the US-German Bilateral Working Group presented the results of the US component of the multidisciplinary research project conducted by the research group of Prof. Peter Latz at the Technische Universität München (TUM). The TUM research group and Verle Hansen of EPA contributed to the presentation and were integral to the U.S. project.

#### Northwest Aluminum



Northwest Aluminum: View to the site from the residential area

The Design Charrette and planning processes are taking place at a 300+ acre primary aluminum smelter in The Dalles, Oregon during demolition of the former federal Superfund site. The purpose and focus of the 5-day Charrette in April 2008 was the development of well-founded design solutions for the reuse and reinterpretation of the Northwest Aluminum smelter site and buildings. The alternative solutions were kept in discussion with all their conditions, constraints, consequences, and advantages.



Silos of the Northwest Aluminum site seen from rooftop

#### Pre-Charrette Site Activities

German design professionals and staff from the Technical University of Munich worked with NAC management and staff, and state and local agency stakeholders in October, 2007 to complete a detailed survey of the site, and to conduct research on environmental, economic, social, and planning characteristics of the location and region. The profound examination of the site is especially important to develop re-use options for the preservation of existing structures as a sustainability concept that includes environmental, social, and economic benefits. After the survey, alternative use options, including the potential development of interim stages, were identified and assessed, similar to the German process for the Westerholt site.



View into the production halls



Detailed site survey - it is essential for the re-use and the preservation of the existing structure

## Participants Charrette Northwest Aluminum, The Dalles, Oregon, U.S.

### 1. 'Round Table'

The 'Round Table' consisted of representatives of the City of The Dalles, Northwest Aluminum Company, Oregon Department of Environmental Quality, Oregon Economical and Community Development Department, Port of the Dalles, U.S. Environmental Protection Agency, the Lockheed Martin Corporation, and citizens of The Dalles.

### 2. Design teams

During the Charrette, collaboration of design professionals, students from the University of Oregon Landscape Architecture, and Architecture programs (graduate and undergraduate) TUM staff and other professionals refined design concepts and illustrations.

## Charrette outcome and Products

The first meeting of the 'Round Table' identified the basic goals of the owner and stakeholders (e.g., meeting cleanup standards, achieving Oregon Economic Community Development Department (OECDD) Industrial Certification, integrating the site into local and regional planning efforts). The 'Round Table' identified key issues such as public perceptions of the site, environmental factors, job creation targets for the location (approximately 6 jobs per acre), regulatory and land use issues.

The conclusions of the 'Round Table' were broken into three main topics that emerged from the weeklong process:

1. Key factors in achieving economic viability through select designs and planning concepts,
2. Creating a new image of the town through site redevelopment due to strategic location of the project, and
3. Creating and enhancing access to and from the site and access to the town and the Columbia River bordering the site.

Innovative factors to achieve economic viability included maximizing "employment-based" land that includes industrial (and business) use with other non-employment uses, improving the efficiency of land use and energy consumption to attract light industry investors, a people-friendly lay-

out to attract higher values, diversification of businesses types, jobs, and reemployment for the people from the community, and variability and flexibility in business spaces.

Each of the four Design Teams similarly reflected a valued grandeur of the aluminum smelter works relative to its physical size. Although the character of these buildings is largely lost in the proposals, each reflected various features of these structures that acknowledged their role in the cultural heritage of the community and the hundreds of workers who labored here for a half-century. Proposals revealed different redevelopment approaches and phasing that were often guided by differing philosophies and design concepts, and importance given to environment, economic development, and social values.

Programs and Design Concepts that emerged from the Charrette process to promote a new image for The Dalles included an acknowledgement that the largest industrial site in the region plays a key role in the town's image, that the vision from the state's only major east-west interstate freeway, and from the adjacent community (where the site could be seen from virtually every vantage point) is essential for community support and acceptance. Notions of industrial history and the image of the site as an icon of the industrial past were very strong in design themes. Access became a key component. The results showed that any design should tie the site to the town centre, but also allow the town to be more attractively connected to the adjacent Columbia River. Considerations for multi-modal transportation were also strong, including more efficient road access and pedestrian and bicycle facilities tying to the nearby river trail.

An interesting and unanticipated result emerged during the presentation of the Design Charrette Northwest Aluminum at the Bilateral Meeting in New York: it was the high degree of interaction generated by the professional quality design concepts, illustrations and research presentations. The effect of the presentation illustrates the value of multi-disciplinary, international exchanges on projects such as this where Brownfield professionals can build on the concepts and methods developed by professionals from varied disciplines. The results of the U.S. Charrette are being documented in a brochure.

## 4.2 Brownscape Design Case Description U.S.: Breckenridge, Colorado, U.S.

*Victor Ketellapper*

### Introduction

Historically, in the western United States, mineral mining has been a temporary use of the land. After the economically recoverable minerals had been removed, mines were abandoned, negatively impacting the characteristics of their surrounding property and environmental systems well beyond their location. These changes in the property included waste-rock piles, mineral-recovery processing wastes, and continuous discharges of acidic metal-laden water, known as acid-mine drainage. They often result in adverse environmental or human-health impacts.

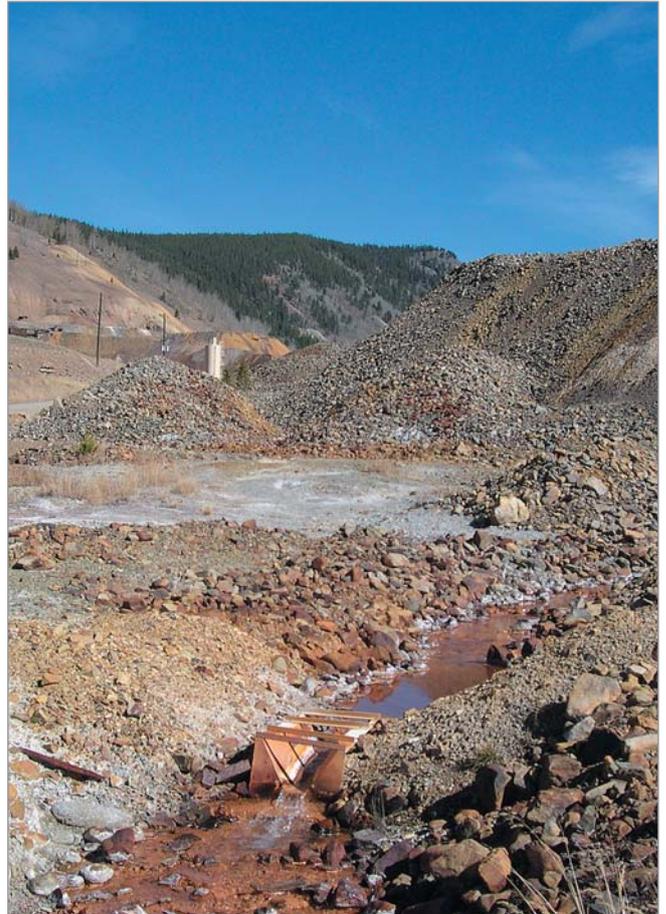


*Victor Ketellapper*

The cleanup of environmental problems at abandoned mine sites is a multifaceted combination of technical, financial, and liability challenges. Without successfully addressing every issue, cleanup moves very slowly, if at all. This is certainly true at the French Gulch site, a century-old metals-mining district, located just outside Breckenridge, Colorado: the mine owners and operators either no longer exist or have limited resources, and those wishing to help voluntarily fix the problem have been scared off by laws that would hold them responsible if the cleanup were insufficient or cleanup standards changed.

Extensive placer and underground lode mining occurred in French Gulch from the late 1850s to the 1960s. Placer-gold mining began in French Gulch in 1859 with small gravity-separation operations; the dredging operations that followed continued until the 1940s. The dredging operations resulted in forty to fifty foot high piles and ridges of cobbles and gravel-size placer tailings throughout the valley floor, destroying the natural aquatic habitat. Underground lode mining began in 1889 and continued through the 1960s. The underground mines typically produced high-grade

zinc-lead-silver ores, as well as some gold ores. Underground mining left numerous shafts, adits, waste rock, and tailings throughout the Gulch.



*Acid-mine drainage with dredge rock piles in background*

The impacts from the abandoned mining in French Creek were sufficiently significant that EPA was considering the site to be included in the Superfund Program in the early 1990s. However, local government officials resisted this due to their concern over the effect of EPA Superfund involvement would have on their community and tourist economy. A community-based approach was proposed by EPA to resolve these issues. This led to the formation of the French Gulch Remedial Opportunities Group, a stakeholders group formed to develop plans to address mining related environmental impacts within French Gulch.

Through meetings of the French Gulch Remedial Opportunities Group, a common vision for French Gulch was developed that established goals for addressing environmental issues associated with historic mining, protecting lands for open space, and affordable housing. This group also came

to an understanding that these goals were interrelated and must be addressed simultaneously. This common vision provided a foundation for a unique multiparty settlement addressing the situation at the French Gulch site that defined environmental liability, provided funding for mine reclamation projects, and allowed the purchase of abandoned mines and adjacent properties for open space, outdoor recreation, habitat preservation, historical preservation, and affordable housing.

### Brownscape Design Process

In 2007, the EPA, the Town of Breckenridge, and Summit County initiated a new Brownscape design process for the neighborhood and its immediate environment, utilizing the landscape architectural services of the Project for Reclamation Excellence at the Massachusetts Institute of Technology (MIT). The goal of this process was to prepare a concept plan that would integrate mine reclamation, expansion of aquatic habitats for threatened species, integration of the recreational use plan, integration with the affordable housing community, and preservation of historic mining artifacts. The Brownscape Design Process consisted of three planning meetings.

Prior to the first meeting, a stakeholder assessment was conducted to identify those individuals who would be invited into the planning process. The result of the stakeholder assessment was the identification of influential individuals in the community who were concerned about the future of French Gulch. Those invited to participate in the planning process represented a broad range of perspectives, including representatives of local government and citizens who live in French Gulch.

The first meeting was held in July, 2007. The focus of this meeting was to hear from the various stakeholders and develop an understanding of their “wishes” for French Gulch. At the beginning of the meeting, the group was presented with a summary of the current condition of French

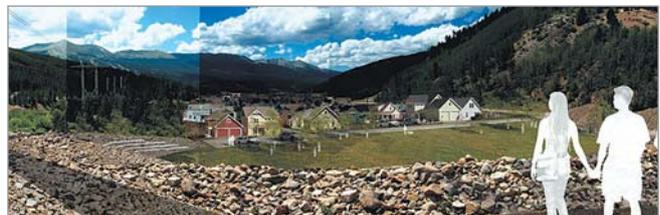
Gulch and an overview of the planning process. The bulk of the meeting was a facilitated discussion concerning the future of French Gulch.

Based on input from the first meeting, the design team developed several concepts for landscape design elements that integrated environmental restoration considerations. Digital simulations were prepared of each of the concepts and presented to the stakeholders group in August, 2007. This was followed by a facilitated discussion critiquing the design elements.

The discussions from the second meeting were used to develop a conceptual design. This was presented to the stakeholders group in November 2007. During this meeting, it was determined to proceed with developing a design for a portion of French Gulch. However, prior to proceeding with this design, data were needed. The data needs included preparing a site topographic map, collecting sediment samples to evaluate metals contamination levels, and identifying site constraints. These data are planned to be collected in 2008. The design and construction of this work are planned to be completed in 2009.



*Current Site Conditions*



*Example of a Conceptual Design for site shown above*

## 4.3 Brownscape Design: Discussion and Conclusion

*Victor Ketellapper*

### Introduction

A new understanding is emerging of the processes and factors that produce successful Brownfield redevelopment projects – projects that reflect the spirit of past and present, that capture the imagination and challenge design and aesthetic norms to produce new visions of “community” and “place.” At Brownfields 2003 in Portland, Oregon, the concept of “Browscape Design” was introduced to describe the phenomenon of world-class art and architecture integrated into the functional aspects of Brownfield redevelopment. In both the United States and Germany, Brownscape Design concepts are emerging that integrate functional redevelopments in existing, former industrial structures.

In this session, approaches to Brownscape Design in the U.S. and Germany were discussed. First, representatives of an international collaboration hosted by Munich Technical University discussed their approach to Brownscape Design. Central aim was the preservation and reuse of the existing structures, not only for aesthetic or historic, but also for social, economic, and ecological reasons. Study cases were two privately-held, heavy industrial sites at the Westerholt Coal Mine in Germany and at The Dalles Northwest Aluminum Company site located in Oregon. A U.S. approach to Brownscape Design was then presented that featured MIT’s approach to integrating landscape design with abandoned mine site cleanup at the French Gulch Site. Throughout these presentations, different stakeholder outreach approaches and design tools were discussed.

### The Brownscape Design Process

The processes presented in the case studies concluded with non-binding recommendations to be used by local government, owners, and/or developers for integrated reuse and redevelopment solutions that include environmental cleanup. These solutions were obtained through facilitated discussions involving various stakeholders including members of the community, landowners, government officials, and technical experts.

The processes began with a pre-vision or starting point to begin discussions. The vision was then modified through preferences and concerns raised by the discussions. Attempts were then made to present the ideas through visual tools such as sketches and computer generated simulations that assisted in further evaluation of the site solutions.

After completion of the stakeholder involvement process, the ideas are to be summarized in a master plan document

or in alternative drafts that can be used as a reference for site planning and to assist in gaining governmental approval.

For this process to be successful, the following should be considered:

1. Attempt to involve all perspectives and stakeholders.
2. Include technical experts to assure vision is realistic.
3. Discuss the group’s role at the beginning of the process. Is it an advisory group or decision making?
4. Provide a welcoming atmosphere including providing snacks and meals.

### Case Studies

Discussion held after the presentation of the case studies are summarized by the following concepts:

1. A high level of community involvement in the planning stages of a project is essential for providing the background for community and government support of the project.
2. Discussion must be held in the context of local economies and population demographics. For instance, both the Westerholt and The Dalles communities were redefining their economies where major employers had left or were in the process of leaving. The Breckenridge community, however, had successfully transitioned from a historic mining community to a tourist economy and was focused on enhancing its tourist appeal.
3. In the U.S., development is generally championed by private developers, while in Germany, the efforts of private and public developers are largely influenced by state, federal, and European programs with their respective funding requirements.
4. In both countries, involving the community is legally obligated. However, this is not always taken seriously by decision makers.

### Tools

The research completed from these case studies found that the following tools should be considered for implementing a successful Brownscape Design process:

1. Obtain input of technical experts for the issues posed by the site including environmental issues and cleanup approaches, landscape designers, urban planners, and architects to make sure that concepts are compatible and implementable.

2. Hire a facilitator or moderator to manage the discussions. One potential source of facilitators is the National Charrette Institute ([www.charretteinstitute.org](http://www.charretteinstitute.org)).
3. Hold design competitions.
4. Perform public outreach/education – involve the public.

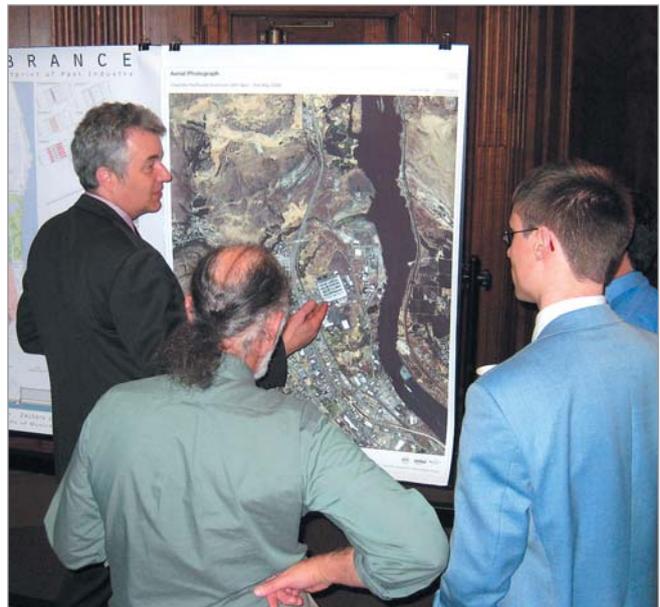
If the Brownscape Design team members would repeat the charrette process, then suggestions to improve the process are:

- Broaden stakeholder participation in the decision process
- Develop proper sequencing of events (use a phased approach) by identifying factors that influence the sequence
- Communicate more openly about how the site will be cleaned up
- Be more open to making changes during the charrette process.

## Next Steps

In classic functional planning, design is developed to meet user requirements. By contrast, in brownscape design, new uses are invented for existing structures. Munich Technical University will be preparing a report that compares and contrasts the two brownscape design case studies they conducted. The goal of this report is to propose a model process for the reuse of Brownfield sites.

EPA and MIT will be preparing a booklet and concept plan with the purpose of providing a tool for integrating open space planning and landscape design into the development of abandoned mine sites including a process for the application of ecological design and redevelopment that can be more effectively integrated with environmental cleanup activities.



*Discussion*

# Cross-Cutting - Regional Planning Criteria for Site Prioritization



*Martin Bittens*



*Verle Hansen*



*Tom DeSantis*



*Uwe Ferber*

## 5.1 Cross Cutting Case Description US: Niagara Region

*Tom DeSantis*

### Introduction

Since its inception in 2000, the Niagara Region Brownfields Coalition has worked towards revitalization of contaminated land within the Niagara Region and along its waterfronts through partnerships with local governments, business owners, and educational institutions. Revisioning Brownfields: A Regional Strategic Approach (“the Plan”) is a strategy developed for the two-county region along the Niagara River in Western New York. This plan was designed to help these communities understand how their brownfields can present new opportunities and meet local needs, providing a policy and practice framework from which brownfield redevelopment projects should be approached. In the Niagara Region presentation, the Plan’s “prioritization tool” for selecting brownfields and prioritizing action was described in general along with a more detailed overview of the City’s role in moving regionally significant projects as part of a multi-faceted local revitalization agenda.

### The Prioritization Process

The prioritization process provides policy makers with guidance on regional priorities for funding, incentives, or other program policies in the following five steps: Step 1: Compile List of Potential Sites; Step 2: Consider Economic, Social and Geographic Aspects; Step 3: Rank and Prioritize; Step 4: Perform Financial Feasibility Analysis; and Step 5: Develop Design Concepts. These are summarized below.

Understanding which sites are most appropriate, which land uses should be encouraged and how public sector resources should be expended to promote redevelopment, can generate public debate. The intent of the presentation was to provide clarity in understanding how Niagara Region went about determining which sites are prime for redevelopment and which need time or alternative strategies before redevelopment. The prioritization process begins by compiling a preliminary list of appropriate sites, then analyzing each with a financial feasibility model. When prioritization is complete, site concept plans can, in some instances, be developed to stimulate potential private sector interest.

### The Steps

The first step in this process is to compile a list of potential redevelopment sites. Once an initial list has been developed, the sites need to be examined from a “planning and community factors” perspective. The goal of this exercise is

to understand how sites fit into the region economically, socially, and geographically. Many of the calculations discussed below are carried out automatically by the “Brownfields Prioritization Tool.” While the tool was created specifically for Western New York (WNY) conditions, it is an Excel spreadsheet that could be modified to work elsewhere.

After data are run through the model, brownfields are divided into three groupings (high, medium and low priorities) based on scores for characteristics in three broad categories: planning and land use, infrastructure/physical, and economic. In addition, low-income communities often bear the burden of pollution and contaminated sites, and to address this issue, a simple method was developed for calculating whether a brownfield is located in a low-income area based on a typical standard of 80% of the county’s median-income. As with other aspects of the prioritization tool, the calculations are undertaken automatically within the spreadsheet as data are entered.

Totaling the scores from the three sections-Planning and Land Use, Infrastructure, and Economics-provides a ranking of sites, which can be further categorized as necessary.

Typically, redevelopment efforts should be focused on the highest-ranked sites. This rating system provides an initial look at sites with the intent to prioritize sites for re-development. Further analysis is then applied to ranked sites using the companion financial model developed to evaluate if a site’s preferred or desired redevelopment is financially feasible. Financial evaluation is important because it allows municipalities to view properties in terms of their desirability to potential investors. With this perspective, decision makers can also determine if additional resources are needed to better position a property for re-investment. Faced with the reality of the costs and benefits of rehabilitation, parcels that rose to the top during the Ranking and Prioritizing may prove to be too contaminated or too encumbered to be “profitably redeveloped” in the short term or given current market conditions. These types of sites or areas may simply require more time and/or more public investment. This knowledge allows for consideration of timing and alternatives to re-development.

This process should typically lead local agencies to develop and test “concept plans” as an important step in realizing redevelopment / reuse potential. Concept plans are best developed through a community-based process where various community interests come together to create alternative concepts for redevelopment. This generates ideas, as well as establishes a dialog that becomes important for

building consensus for any potential re-development. It also establishes the municipality’s long-term intentions and commitment to a site or area. Community input and concept plan development allows one to evaluate the desirability of a particular proposal, which together with the financial modeling allows one to evaluate the quality of an investment based on key variables including holding costs, purchase and resale price, the time value of money, as well as rental properties with cash flow and vacant properties with no rental income, or multiple end uses for a site. It is a methodology that allows multiple actors to evaluate many sites over several municipalities using a verifiable measure that brings clarity as to how the public sector might con-

tribute its resources in bringing which sites back into the marketplace for what purpose.

## Summary

The Niagara Region’s Brownfield Prioritization Tool has proven useful. It is grounded within the community-planning framework locally and it has proven itself helpful in focusing public action in pursuit of priority opportunities. However, the tool does not evaluate ecological values related to a site or area nor does it help in dealing with the “non-priority” sites that are unlikely to see investment or public attention for a very long time.



*Northcentral Buffalo Ave*



*Southeastern Buffalo Ave*



*Praxair Site Oblique*



*Tract Ila*

## 5.2 Cross Cutting Case Description US: Stella, Missouri

*Verle Hansen*

### Site Priorities Depend upon Desired Outcomes

Land subject to remediation is usually considered relative to its availability and its potential financial return-on-investment. Typically, these short-term considerations are unrelated to the long-term conditional relationships that exist between humanity and a sustainable environment. Development that is intended to meet immediate human and economic needs typically overrides environmental considerations. Because all development of the built environment will incrementally and cumulatively consume the finite natural environment, this is not sustainable. Any long-term consideration of an environment that will sustain human life will require that site-selection, land-use, and the natural environment be considered concurrently with economic and social development. Although site-selection and land-use to meet short-term economic and long-term social and environmental objectives appear to contradict each other, this presentation illustrates that they are compatible.

### A Sustainability Basis for Conferring Priority to Sites

We expect that without humanity, natural systems would continue to evolve along natural trajectories and would be sustainable. This premise allows us to hypothesize that natural systems also will be sustainable with humanity, if the essential attributes of these systems remain intact. If this hypothesis is true, it is possible to use these essential attributes as prerequisite conditions for development of the built environment. Because natural systems are at risk when social and economic systems are compromised, it is also necessary to establish the essential attributes of intact social and economic systems. The test of this hypothesis is accomplished by compiling a list of these essential attributes, applying them to different sites, and measuring whether these systems are as or more robust after development to meet human objectives as they were before.

The tool that is used to meet objectives within conditions is the planning process. Typically any project to develop the built environment must meet various human objectives within several sets of conditions, e.g., zoning codes, building codes, fire regulations, owner requirements, user requirements, available materials, properties and strength of materials, laws of thermodynamics, Newton's laws of physics, etc. No one asks whether these conditions must be met, but how to meet them. Three sets of conditions, equally important to the above listed conditions, are intact natural, social, and economic systems and should be used to define the physical forms of our agricultural

and urban environments. When these conditions are properly used, the resulting socio-physical environment should equitably and efficiently meet human needs, while assuring that ecosystems will retain the ability to sustain human life.

Land subject to remediation plays an important role in this strategy. Development or re-development of any site will incrementally and cumulative take something from natural systems. Land that is no longer needed to support human needs will take something from the economic and social systems, and could further erode natural systems or improve them. If these land-use decisions are to be sustainable, they must be made within the context of the natural, social, and economic systems they affect. Such consideration is possible within the strategy described above. Because the potentials of all sites differ with respect to their ability to contribute or degrade these systems, priority could be given to sites relative to the importance of their desired systemic effects. However, as with all prerequisite conditions of development, none are negotiable, and systems must be as or more robust after land-use decisions are applied as they were before. Such considerations do not define or preclude land uses; they merely establish the conditions that must be met when land-use decisions are being made so that economic, social, and environmental systems retain the ability to sustain each other.

### Prioritizing Sites to Meet A Collective Goal

Every site is related to other sites within local, regional, landscape, continental, and global contexts. It is possible, therefore, to give priority to these sites within these larger contexts; and it is not possible to achieve many objectives, e.g., sustainability, without this consideration. Consideration of these broader contexts and an attempt to prove the above concept lead to creation of a master plan for the village of Stella, Missouri, USA. Citizens supplied a list of community needs and described their values. The challenge was to plan a community that would meet those needs and values within the conditions of intact social, economic, and ecological systems as described above. The proof that this strategy works is subject to comparison of ecological, social, and economic systems before and after development. Although the plan is being implemented by citizens of Stella and will take time to realize, preliminary lessons learned in the application of this strategy are important. First, sustainability is an objective that must be strived for, but it also must be achieved every day for existing conditions. Second, sustainability is largely achieved by building community, i.e., facilitating interactions between people so that citizens are

aware of local needs and opportunities. Third, although no place can exist without providing opportunity to make a living, to be sustainable it must provide a place that inspires the human spirit and persuades them to stay when opportunities are presented elsewhere. Fourth, the measures of sustainability are the community's ability to meet its needs, endure over time, and evolve in place. Fifth, although sites are developed individually, their effects on systems extend well beyond sites. If we expect systems to remain intact, then sites must be used in concert with other sites.

### Benefits of Prioritizing Sites within A Systems Perspective

This planning strategy attempts to align the economic and social development of a community with the natural systems that sustain it; and in the process fulfills three necessary goals.

1. It protects the environment by accounting for impacts of development before they occur, and in doing so, eliminates the decades and associated costs required for cleanup and restoration.

2. It establishes a harmonious relationship between humanity and the environment while providing a laboratory for study of this relationship.
3. It enables us to intentionally plan to meet human needs and economic expansion while retaining the natural environment's ability to sustain both.

### Sustainability Criteria

If the ability to sustain human life is dependent upon intact natural systems that remain on their natural trajectories, then they must retain the ability to self manage. Intact natural systems, i.e., ecosystem integrity, exists when productivity, biodiversity, soils, and water remain in near-natural conditions (Forman 1995). Because humanity is also natural, it is included in this equation as long as natural structures and processes remain sufficiently intact to sustain human life. The following essential attributes of natural systems are our current best estimate that will keep natural systems intact. Because intact natural systems are related to intact social and economic systems, these criteria should be the basis for land-use decisions and evaluation.



Stella Attractive Core Area



Stella Masterplan

**Table 1 – Criteria for Sustainable Ecological Systems**

| Environmental Condition | No. | Essential Attribute of Intact Ecological Systems  |
|-------------------------|-----|---|
| Productivity            | 1   | Native plant communities predominate  |
|                         | 2   | Natural disturbance regimes exist.  |
| Biodiversity            | 3   | Habitats exist in forms that support MDP (minimum dynamic populations) native species (Baydack, Campa et al. 1999).   |
|                         | 4   | Unique features of landscapes are protected.  |
|                         | 5   | Contiguous habitats exist beyond the reach of stochastic events.  |
|                         | 6   | Connectivity between habitats is redundant and grain appropriate for native species.  |
|                         | 7   | Resources essential to migratory species exist.   |
|                         | 8   | Flowing water has no non-negotiable obstruction to passage of native life.  |
| Soils                   | 9   | Soils retain natural mineral nutrient levels and moisture content to sustain native plant species.  |
|                         | 10  | Soils retain natural porosity and percolation, stormwater retention, and erosion resistance.  |
|                         | 11  | Soils remain clean enough to support native plants, bacteria, fungi, and soil organisms.  |
| Water                   | 12  | Water quantity and speed of surface flows meet historic cycles, durations, and intensities.   |
|                         | 13  | Average volumes of groundwater are balanced between withdrawals and recharge.   |
|                         | 14  | Water quality of all surface and groundwater is free of contaminants that threaten life.  |
| Air                     | 15  | Air quality poses no threats to life and photosynthesis.  |
|                         | 16  | Global climate is unaffected by human actions with energy budgets on land similar to native landscapes and no increase in airborne pollutants that increase greenhouse gases. |
| Atmosphere              | 17  | Atmospheric radiation shield is maintained.   |

**Table 2 – Criteria for Sustainable Social Systems**

| Social Condition | No. | Essential Attribute of Intact Social System            |
|------------------|-----|--|
| Needs            | 1   | Basic human needs are met.                             |
|                  | 2   | Resources necessary for human survival are accessible. |
| Safety/Security  | 3   | Future options are protected.                          |
|                  | 4   | Human life is isolated from stochastic events.         |
|                  | 5   | Risks to human life/health are known.                  |
|                  | 6   | Right to safe environment is institutionalized.        |
| Equity           | 7   | Natural resources benefit people.                      |
|                  | 8   | Institutions exist to serve collective.                |
|                  | 9   | Individuals have a voice in matters that affect them.  |
|                  | 10  | Community values affect change.                        |

**Table 3 – Criteria for Sustainable Economic Systems**

| Economic Condition | No. | Essential Attribute of Intact Economic System   |
|--------------------|-----|---|
| Efficiency         | 1   | Resource use must be linked with resource investment.   |
|                    | 1a  | Maximize efficient use of natural resources and invest profits in increasing supply of natural resources (Daly 2002). |
|                    | 1b  | Economic investments preserve the capacity for natural capital to be re-invested (Lovins, Lovins et al. 1999).        |
| Equity             | 2   | Qualitative community resources are improved (Kinsley 1994; USEPA 1998).  |
|                    | 3   | Net economic effects are greater than costs incurred to natural and social systems.                                   |
|                    | 3a  | Consumption of natural resources is counted as a cost (Daly 2002).  |
|                    | 3b  | Costs are calculated prior to being incurred.   |
|                    | 4   | Financial resources are sufficient to maintain community infrastructures, institutions, and services.                 |

## 5.3 Cross Cutting Case Description Germany: Cost-effective reclamation and maintenance of Brownfield sites (KOSAR)

Uwe Ferber

### Background

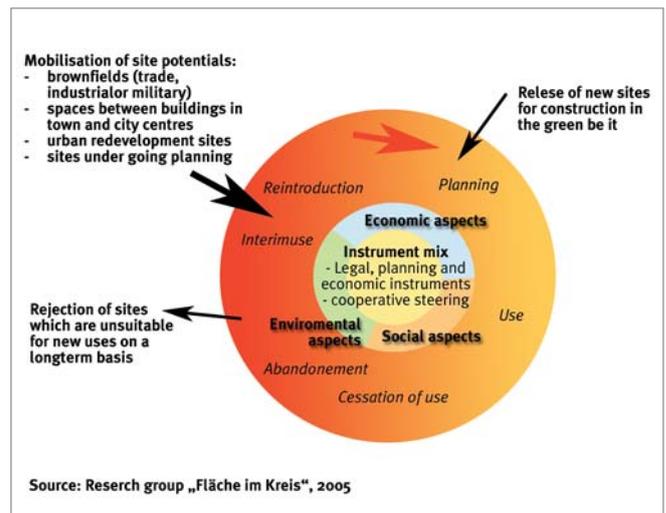
Across Europe, concerns about the shape and form of urban living, economy, climate and environment and in particular the problems related to urban sprawl, mean that the compact urban development is increasingly seen as an important component of sustainable and competitive cities and regions. In particular, significant impacts are seen in the transformation of European cities and regions by the loss of a number of historical industries, military conversion, inner-urban segregation, migration and demographic change. The increasing suburbanisation process and the reluctance of new investors to take on urban locations are becoming a long term handicap for economic growth and sustainable development. Poorly integrated and unsystematic land use policies increase land-related conflicts. Many European cities have been developed (or soon will be developed) into regional agglomerations, but planning methods, institutional structures and the associated management tools have not progressed fast enough to cope with the increasing scale, interconnectivity and complexity this growth has generated. It is claimed that the “traditional” planning visions still applied can no longer deliver integrated planning for modern cities facing the demographic development and integration needed to react to climate change.

### Circular Land Use Management

The approach for land management is proposed on the principle of Circular Land Use. REFINA-KOSAR contribute an important element to the new concept of Circular Land Use Management as an integrative policy and governance approach, which presupposes a changed land use philosophy with regard to land utilization.<sup>1</sup>

Circular flow land use management embodies a different philosophy of use, which is expressed by the motto: “avoid – mobilise – revitalise” (in German, REF). This management approach accepts the exploitation of greenfield sites under specific conditions, but primarily and systematically seeks to utilise the potential of all existing sites including brownfield and grayfield sites. Circular flow land use management also intends to provide a governance approach. It is implemented at both the local and regional level. The cycle relies on (1) the interplay between strategies and instru-

ments in different fields of activity and on (2) a suitably comprehensive deployment of tools (instrument mix) in these areas, which includes planning, land information, cooperation, organisation and management, investment and support programs, marketing and legislation.



Circular Land Management Model

### REFINA-KOSAR

The REFINA – project KOSAR tackles specifically the aspect of interim use in the circular land use management. A significant proportion of brownfield land, specifically in areas with shrinking populations, is not immediately commercially viable to bring back into beneficial use. Without some form of public intervention these sites will remain unused, and potentially derelict, for the foreseeable future. The consequence is blight on the surrounding areas and communities and the loss of an opportunity to renew the community in a sustainable manner. High cost of reclamation / redevelopment and low market values constitutes a specific challenge for many cities and regions. The problems associated with these sites particularly relate to:

- market forces are not the driver for redevelopment
- future use is often limited to soft end uses
- reuse would only be a long term option
- the majority of public programs focus on redevelopment for economic beneficial uses.

<sup>1</sup> 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.

This status leads to residual brownfields where more and more of these 'hardcore' sites remain unused or under-used for long periods of time. This extended derelict phase in turn can cause considerable associated urban problems for the economic and social redevelopment of the whole area. One possible option or basic solution for these sites are soft-end uses, whether permanently (i.e. with a definitive loss of development opportunities), or as an interim use (i.e. affording the sites some form of reserve status).

For the first time, REFINA-KOSAR proposes a definition of 'Reserve sites':

Reserve sites were used by industry, military, or infrastructures that are or will be transformed by limited / targeted technical and environmental interventions under urban criteria, reserved with minimized risks for future users.

One pilot scheme will be tested in the city of Chemnitz for different uses for leisure, recreation and low-cost greenings. One sub-topic of growing importance is the production of biomass on reserve-sites. KOSAR develops recommendations for the production of timber (for heating systems, power stations) but also for the production of grass. The critical boundary conditions on brownfields for

the biomass production are the soil conditions of brownfields (former industrial sites lack natural soils).

In a reserve status, no final or binding decision is made regarding the future use of the site. It is probable that the transition of a site from abandoned or derelict status to a reserve status could be fairly immediately fulfilled, especially for sites already publicly-owned, and it could also be a cost-effective action. Therefore, a need exists to explore specific planning and technical approaches for the use of reserve status for brownfields. Options of this nature should be developed and implemented by affected regions and municipalities as part of their spatial planning responsibilities.

## Conclusion

Visions of Circular Land Use Management will be strongly influenced by the goal to create beneficial land use structures – either by passive contributions on energy consumption by traffic, natural soil protection or actively by energy production on land integrated in temporal of final land use options. KOSAR will contribute by finding adequate technical and urban solutions to the growing number of non-market-viable brownfield sites. More information on KOSAR under <http://www.refina-kosar.de/>



Industrial Brownfield Fürstenstrasse

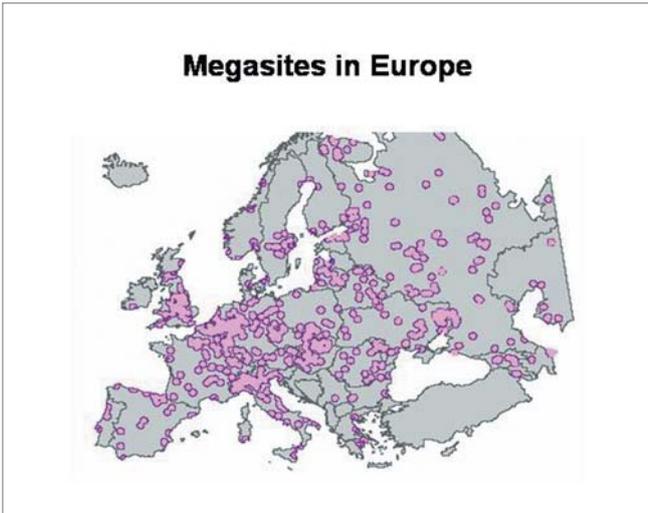


Structural Concept as a Site with Reserve Status Fürstenstraße

## 5.4 Cross Cutting Case Description Germany: Strategies for the Revitalization of Brownfield Areas in the Larger Potsdam Region (SINBRA) – Technology Demonstration Platform

*Martin Bittens, Arno Rein, Hermann Rügner, Reimund Schwarze, Michael Finkel*

In Germany and other European Countries, a large number of regions exist where industrial, military and mining activities during the past century have led to vast contamination in soil, groundwater and surface waters.



Large-Scale Contaminated Sites in Europe

Main features of these sites are:

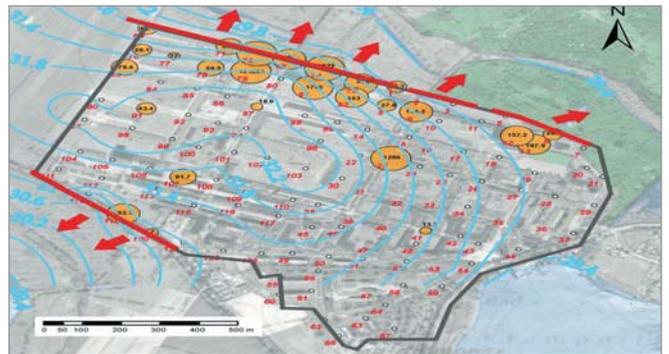
- The occurrence of multiple sources with usually unknown extent
- A multitude of large contaminant plumes in groundwater
- The presence of multi-compound mixtures
- The extreme investigation and remedial costs for site revitalization.

Large-scale contaminated sites may severely affect human health, the environment and the economy. Currently some 20,000 of these so called megasites exist in Europe (including States from Eastern Europe) with estimated costs for required revitalization measures that exceed the amount of 100 Billion Euros. These figures clearly demonstrate that revitalization of megasites demands innovative site investigation and remediation strategies to make it economically feasible. The REFINA-SINBRA project 'TV5: Technology Demonstration Platform' addresses the challenges by the application of innovative site investigation methodologies at the Potsdam-Krampnitz site. These include:

1. On-Site Screening Tools
  - (a) Direct Push (DP) based groundwater investigations
  - (b) Tree sampling alongside a wide meshed grid as indicator for volatile and semi-volatile contaminants in the subsurface.
2. Off-Site Screening Tools – Integral investigations in the groundwater downstream area

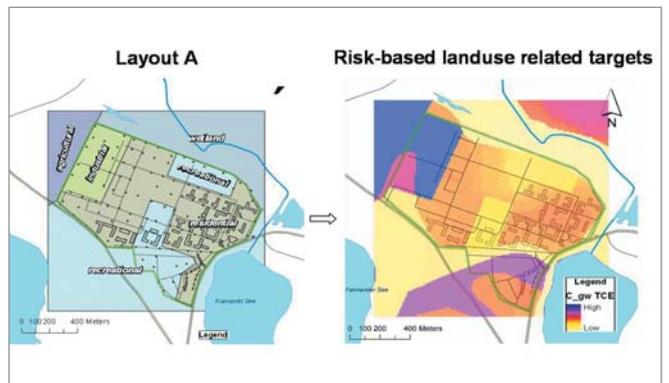
- (a) Assessment of mass fluxes to evaluate impacts beyond the site (comparison with legal requirements)
  - (b) Acquisition of mass loads, concentrations, and site specific data (kf, m, i) for modeling of transfer and exposure pathways
  - (c) Assessment of uncertainties and the range of variations (concentrations, hydro-geological data, mass loads).
3. Modeling: Tools – Volatilization from soil and groundwater
- (a) Pathway soil/groundwater – indoor air
  - (b) Pathway soil/groundwater – ambient.

The tools contribute to the development, implementation, and operation of an integrated decision support and management system that allows a cost-effective revitalization management. This system comprises an integrated environmental



Results from On- and Off-Site Screening Tools

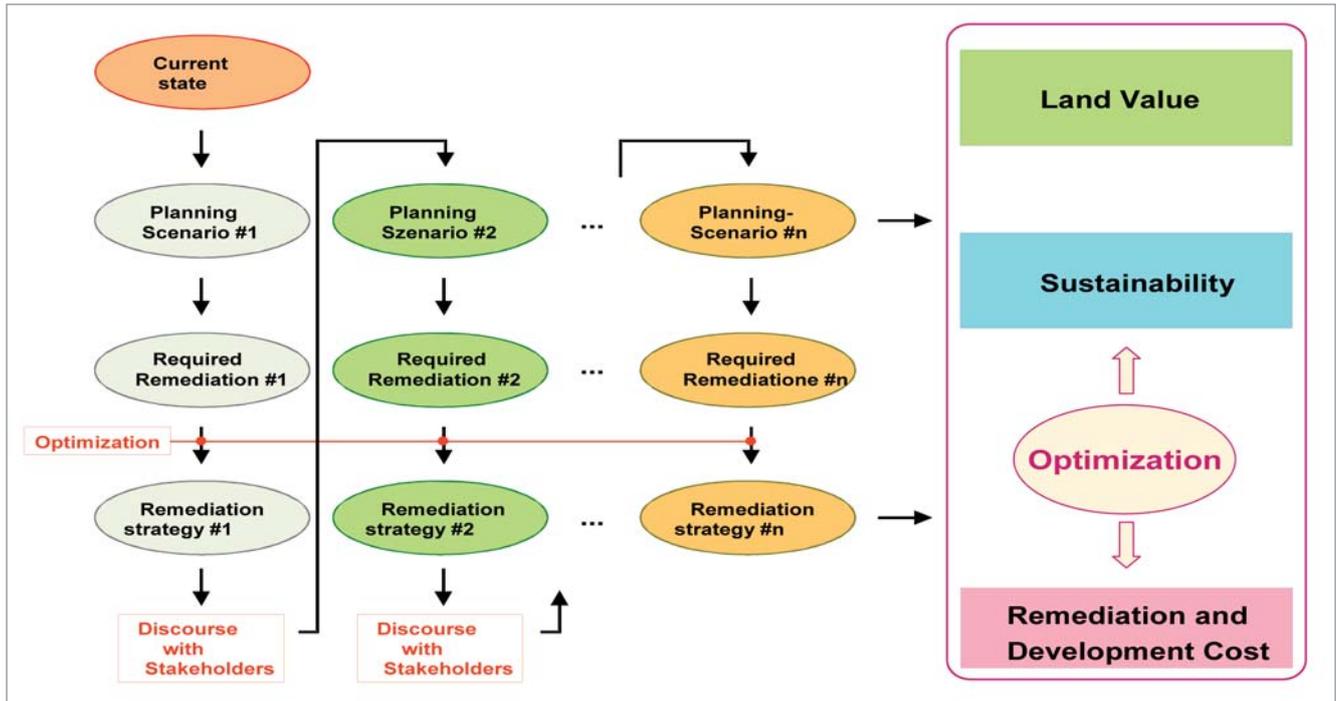
impact assessment and a set of quantitative modeling, cost calculation, and optimization tools to select cost-effective options (land use restrictions, remediation, financial precautions, etc.) for managing existing risks.



Risk-Based Revitalization Management

By overlaying contamination data and the resulting remediation targets, respectively, with a predefined planning scenario, areas of conflict can be tagged. In an iterative approach it is possible in further layouts to relocate the

planned land uses in order to reduce the areas of conflict. The procedure leads to an optimized eco-efficient and cost-effective remediation strategy in the framework of megasite revitalization, taken into account criteria such as land value, sustainability, remediation and development costs.



Megasite Revitalization – Iterative Procedure for Optimization

## 5.5 Cross Cutting: Discussion and Conclusion

*Ann Vega, Kelly Black*

The four speakers (two American and two German) in the 'cross-cutting' theme: "Regional Planning Criteria for Site Prioritization," gave somewhat different perspectives concerning the topic of site prioritization. In the German presentations, we heard from Martin Bittens and Uwe Ferber, who spoke about Circular Land Use Management. Circular Land Use Management describes the stages a particular area may experience over its life time in an iterative fashion: planning, use, cessation of use, abandonment, interim use, reintroduction (then back to planning). Two REFINA examples were given: KOSAR, which focused on cost-effective interim management and SINBRA, which focused on minimizing development costs. In the American presentations we heard from Tom DeSantis, who spoke about regional planning in the Buffalo-Niagara Region. Specifically, he spoke about a bi-national collaboration between the U.S. and Canada called "Niagara 10"; the strategic Brownfield Waterfront Plan; and the use of Brownfield Opportunity Areas (BOA) as tools for sustainable regional revitalization. Verle Hansen spoke about developing a master plan for the town of Stella, Missouri using sustainability planning criteria to create the built environment with no net negative impacts on the environment.

The facilitated discussion focused primarily on the German and American planning processes. In Germany, a planning environmental impact assessment is required. However, there are no quantitative limits for environmental impacts. If damage occurs, but social and economic benefits are realized, the damage is "forgiven."

Comments were made about the need for "environmental impact" boundaries. Developers are trying to profit, and if boundaries aren't set, they will maximize profit at the expense of the environment. Individuals are selfish. They will focus on what benefits them as opposed to society as a whole. The political framework needs to be established to require and enforce environmental impact boundaries.

Sustainability of the environment is not valued. Market costs and benefits drive development. It might be possible to develop a site for an interim use in order to "buy" time for long-term planning. In the US, there is no regulatory flexibility so the interim use would still need to meet regulations. In Germany, it is easy to make the case for demolishing buildings due to risk and this facilitates interim use. People will pay to stabilize the area and remove stigma. More sites can be prepared for revitalization because it is not as expensive to stabilize the area as it is to completely redevelop a site. It was questioned whether or not this

approach could be taken on a heavily contaminated site like a superfund site, because it would cost a lot to stabilize the site and remove risk.

Sprawl sells because most of the time it is cheaper than remediating and repairing existing infrastructure. There is a need for governments to identify what behavior people should exhibit and provide incentives to encourage this behavior. Governments need to generate support for sustainable behaviors. They need to demonstrate that greater negatives exist for sprawl over the long term. There is a need to raise public awareness about resource depletion and to educate individuals and governments about revitalization impacts.

It was stated that one site can have a huge effect on the region, and it would be prudent to impose conditions on that site to fit into the region. It is important to revitalize a site within a regional context. One method proposed for doing this was to establish sustainability planning criteria. Some criteria have been developed in the US and were forwarded to all workshop participants after the workshop (and included herein). The criteria emphasize keeping resources (economic, social, and ecological) within the community. The criteria were tested at a small scale and now need to be tested at a larger scale. Other criteria mentioned were LEED and Energy Star. It was stated that these criteria are not as broad as the sustainability planning criteria.

One limitation on sustainability is cheap energy. Again – without incentives or policies requiring certain approaches, the market will drive development and revitalization and ecological resources will be considered after social and economic impacts.

Verle Hansen forwarded a list of his sustainability planning criteria to all workshop participants. As a next step, perhaps these could be incorporated into existing tools, like the Brownfields Prioritization Tool in the Niagara Region. Tom DeSantis and Martin Bittens would like to apply some of the tools developed in Germany for minimizing development



*Networking break*

costs at a site in the Niagara region. This will help determine if two areas with similar problems (but in two different countries) can have similar solutions.

# Conclusions



## 6.1 Incorporations in SMARTe

*Ann Vega, Roger Argus, Kelly Black*

SMARTe (Sustainable Management Approaches and Revitalization Tools – electronic) is a freely available, open source, web-based, decision support system located at: [smarte.org](http://smarte.org). SMARTe helps users overcome site revitalization obstacles by providing information, resources, links, and case studies for all aspects of revitalization including planning, environmental issues, social acceptance, and economic viability. SMARTe also contains analysis tools for evaluating specific aspects of revitalization such as analyzing site characterization data, performing risk assessments, selecting a developer, and converting units of measurement. Further, SMARTe is an integrated decision support system that allows revitalization stakeholders to objectively evaluate reuse options for specific sites and circumstances using a cost-benefit calculator. Revitalization stakeholders can use SMARTe to help them understand social, economic, and ecological trade-offs, present information to other stakeholders, and develop a revitalization plan.

The current version of SMARTe requires additional development in areas such as: visioning, GIS capabilities, risk assessment, fate and transport modeling, remediation technology selection, identifying sources of money, sustainability, creating a revitalization plan and cost-benefit analysis. Additionally, EPA wishes to expand SMARTe to allow users to incorporate regional considerations in sustainable land management planning (specifically from Phase 4 of the US-German Bilateral Working Group). New versions of SMARTe will be released every year with new tools and capabilities. EPA is currently seeking partners for a Cooperative Research and Development Agreement (CRADA) to further research and develop decision support tools related to sustainable land management. Tools such as educational materials, documents, case studies, checklists, calculators, spreadsheets, databases and decision analysis tools will be developed and incorporated into SMARTe. All such tools developed under Phase 4 of the US-German Bilateral Working Group will be included.

## 6.2 Incorporations in the REFINA program

*Maike Hauschild, Stephanie Bock*

REFINA - The program "Research for the Reduction of Land Consumption and for Sustainable Land Management" funded by the Federal Ministry of Education and Research (BMBF) is part of the German National Strategy for Sustainable Development. The German federal government has set the goal of reducing land consumption for new settlement and transport-related areas from currently 115 to 30 hectares per day by 2020. In order to provide a scientifically reliable basis for decisions and measures, REFINA supports the development and testing of innovative concepts for the reduction of land consumption. These concepts should help to achieve a multitude of goals such as the protection of the environment and conservation of nature, economic growth, socially compatible housing, quality of urban building and mobility.

The REFINA program bundles the competence of a large number of institutions, projects and people in cooperation across traditional sectoral and administrative boundaries - with the aim of generating benefits for all. From 2006 to 2010, innovative concepts to reduce land consumption for development and to promote sustainable land manage-

ment are to be developed and implemented. Throughout the country, the program covers over 100 projects in 45 research consortia and single projects.

In 2005, phase 4 of the U.S.-German Bilateral Working Group started with a new focus on sustainable revitalization. The continued cooperation now is based on REFINA projects with "volunteer" practitioners in the U.S. The intensive discussions during the New York Workshop, the last common meeting, showed the emphasis of working together toward common goals and a shared vision.

The participating REFINA projects gained from the cooperation in different aspects. The international cooperation helped to widen their own perspective and contributed to find new solutions by discussing the developed concepts in Germany under an international perspectives. Learning from each other strikes new and unconventional paths in REFINA. The arrangements for further workshops point out the growing interest in the cooperation concerning sustainable land use management.

## 6.3 Next Steps of US-German Bilateral Working Group

*Ann Vega, Maike Hauschild*

As follow-up of the bilateral workshop in New York, EPA is entering into a cooperative research and development agreement (CRADA) with the Helmholtz Centre for Environmental Research (UFZ) in Germany. Within the project “The Terra, Aqua & Site Remediation Competence Centre Leipzig (TASK)” the UFZ will develop DE.SMARTe.org, a mirror image of SMARTe in German, and will develop tools that can be re-mirrored back into SMARTe. TASK is dealing with an accelerated technology and know-how transfer in the fields of soil and groundwater remediation and contaminated site revitalisation and is jointly funded by the BMBF and UFZ. The development of DE.SMARTe.org is to implement several tools and results from the German

funding programs such as REFINA, KORA (Retention and Degredation Processes to Reduce Contaminants in Groundwater and Soil, <http://www.natural-attenuation.de>) or SAFIRA (Innovative technologies for the economical remediation of complexly contaminated groundwater, <http://safira.ufz.de>) into the decision support system and make them freely available to an international audience. BMBF highly supports knowledge transfer from current and former funding programs. Main activities of the REFINA program in its final part are dissemination and knowledge transfer. In this context, TASK and US EPA will execute two bilateral workshops, one in 2009 in Germany and a second in 2010 in the United States.

# Participant List – Including Authors

A decorative graphic on an orange background. It features a large, semi-transparent number '7' in the upper left. Below it is a grid of 8 columns and 7 rows of squares. Some squares are colored in various shades: grey, purple, red, green, blue, brown, and orange. The rest of the squares are white. A semi-transparent orange circle is positioned to the right of the title.

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| Red | Blue   | Grey  |        |       |        |       |      |
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## Participant List – Including Authors

| Name                  | Affiliation  | Email                              |
|-----------------------|--|------------------------------------|
| Roger Argus           | Tetra Tech   | Roger.Argus@ttemi.com              |
| Martin Bittens        | Helmholtz Centre for Environmental Research (UFZ)                              | martin.bittens@ufz.de              |
| Kelly Black           | Neptune and Company  | kblack@neptuneinc.org              |
| Stephanie Bock        | German Institute of Urban Affairs (Difu)                                       | bock@difu.de                       |
| Tom DeSantis          | City of Niagara, New York  | Thomas.DeSantis@niagarafallsny.gov |
| Uwe Ferber            | Ferber, Grauman und Partner  | uwe_ferber@projektstadt.de         |
| Rebekka Gessler       | TU Muenchen  | gessler@wzw.tum.de                 |
| Verle Hansen          | EPA ORD  | hansen.verle@epa.gov               |
| Maike Hauschild       | Projekträger Jülich (PTJ)  | m.hauschild@fz-juelich.de          |
| Lars Holstenkamp      | Leuphana University of Lueneburg   | holstenkamp@uni.leuphana.de        |
| Lee Ilan              | City of New York Mayor's Office<br>of Environmental Coordination               | lilan@cityhall.nyc.gov             |
| Victor Ketellapper    | EPA Region 8   | Ketellapper.victor@epa.gov         |
| Heinz-Peter Klein     | LEG Saarland   | h.klein@leg-saar.de                |
| David Kooris          | Connecticut Regional Planning Association                                      | david@rpa.org                      |
| Matthias Lampert      | TU Muenchen  | lampert@wzw.tum.de                 |
| Stan McMillen         | Connecticut Department of Economic<br>& Community Development                  | stan.mcmillen@ct.gov               |
| Doug MacCourt         | Ater Wynne LLP   | dcm@aterwynne.com                  |
| Sabine Martin         | Kansas State University Center<br>for Hazardous Substance Research             | Smartin1@ksu.edu                   |
| Peter Meyer           | University of Louisville/ Northern Kentucky                                    | pbmeyeo2@louisville.edu            |
| Gertrude Penn-Bressel | Federal Environment Agency (UBA)   | gertrude.penn-bressel@uba.de       |
| Gary Riley            | EPA Region 9   | riley.gary@epa.gov                 |
| Cecily Sabedra        | Tetra Tech   | Cecily.Sabedra@ttemi.com           |
| Reimund Schwarze      | Helmholtz Centre for Environmental Research (UFZ) /<br>University of Innsbruck | rschwarze@online.de                |
| Steve Soler           | Georgetown Development Company   | SSoler@georgetownland.com          |
| Stefan Thiel          | Probiotec  | thiel@probiotec.de                 |
| Ann Vega              | EPA ORD  | vega.ann@epa.gov                   |
| Lyle Wray             | Capitol Region Council of Governments  | lwwray@crcog.org                   |

### Co-Authors

|                 |   |  |
|-----------------|---|--|
| Stephan Bartke  | Helmholtz Centre for Environmental Research (UFZ) /<br>University of Tübingen |  |
| Michael Finkel  | University of Tübingen  |  |
| Arno Rein       | Helmholtz Centre for Environmental Research (UFZ)                             |  |
| Herrmann Rügner | Helmholtz Centre for Environmental Research (UFZ)                             |  |

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## Bilateral Contacts

### Project management on behalf of BMBF

Forschungszentrum Jülich GmbH  
Projektträger Jülich  
Maike Hauschild  
Zimmerstr. 26-27  
D-10969 Berlin  
Phone: +49 (0)30/20199-454  
Fax: +49 (0)30/20199-430  
email: m.hauschild@fz-juelich.de  
Internet: www.fz-juelich.de/ptj/



### Project management on behalf of U.S. EPA

USEPA, Office of Research and Development  
Ann Vega  
26 W. Martin Luther King Dr.  
Cincinnati, OH 45268  
Phone: +1 513/569-7635  
Fax: +1 513/569-7676  
email: vega.ann@epa.gov  
Internet: www.epa.gov



REFINA on the Internet:

[www.refina-info.de/en](http://www.refina-info.de/en)

