
BROWNFIELDS

CRITICAL PATHS FOR REGIONAL REDEVELOPMENT

THIS REPORT WAS DEVELOPED
BY GRADUATE STUDENTS FROM
THE IIT-INSTITUTE OF DESIGN
IN COLLABORATION WITH THE
CALUMET COLLABORATIVE.



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ID

IIT Institute of Design (ID) is a graduate design school with a history of innovation. ID pioneered the development and dissemination of modern design from its founding in 1937 as the New Bauhaus in Chicago. Experimentation, rigorous methods, systems design, and strategy support ID's current focus of preparing individuals and organizations to take on the world's complex, fast-changing, and unpredictable problems such as competitiveness, digital media and learning, health and wellbeing, social innovation and more.



Calumet
COLLABORATIVE

The Calumet Collaborative is a bi-state nonprofit organization dedicated to achieving inclusive regional prosperity and improving quality of life in the Calumet region through sustainable development. The NGO catalyzes innovative partnerships between Illinois and Indiana stakeholders to advance a thriving Calumet region with a focus on (1) Livable Communities, (2) Economic Opportunity, (3) Environment, (4) Culture and heritage.

OVERVIEW

This report was developed by graduate-level students from the IIT–Institute of Design (ID). The work is a result from a 14-week collaboration between ID and the Calumet Collaborative. It captures a high-level understanding of the current state of how brownfields are redeveloped in the Calumet region, and frames brownfields redevelopment as critical paths for restoring local economies in the Calumet region.

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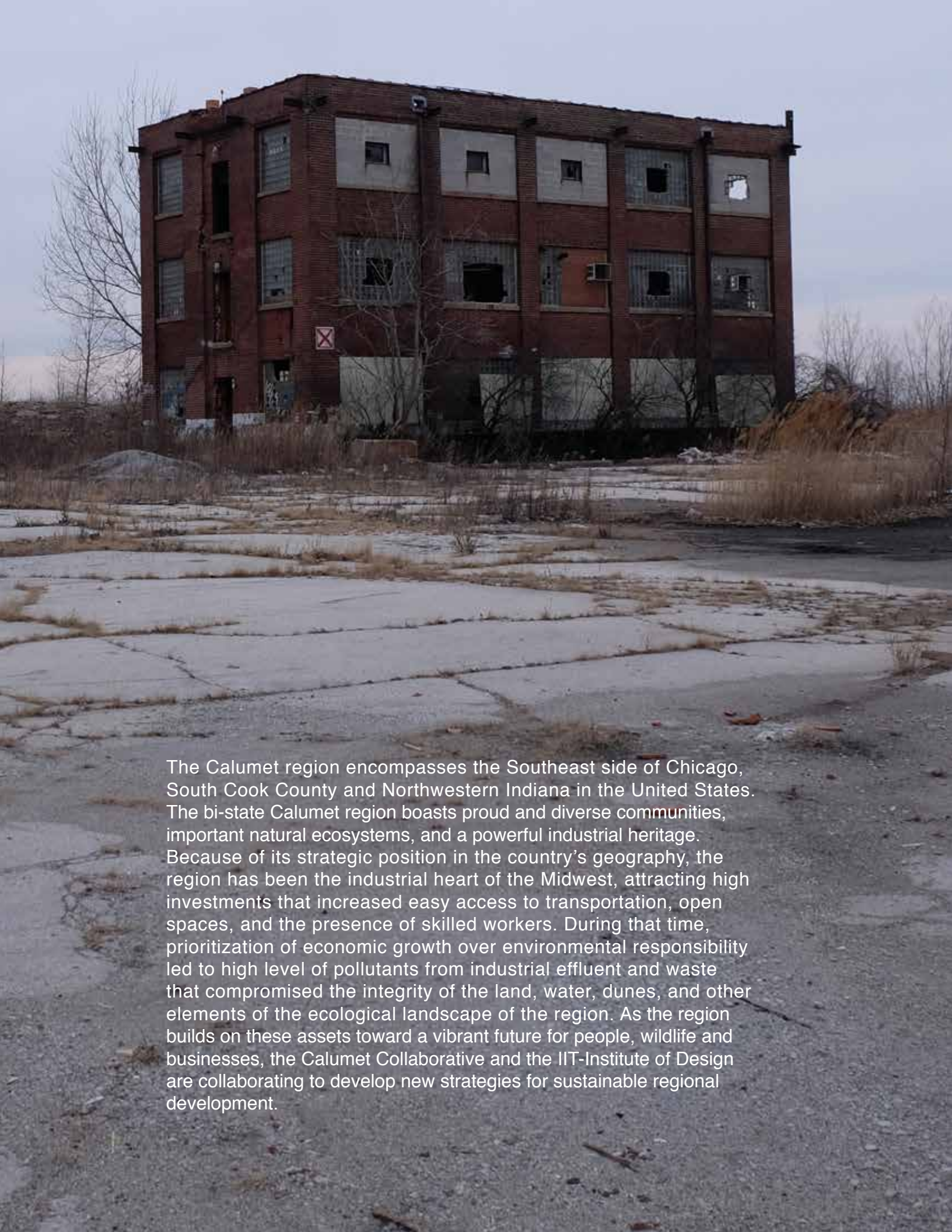
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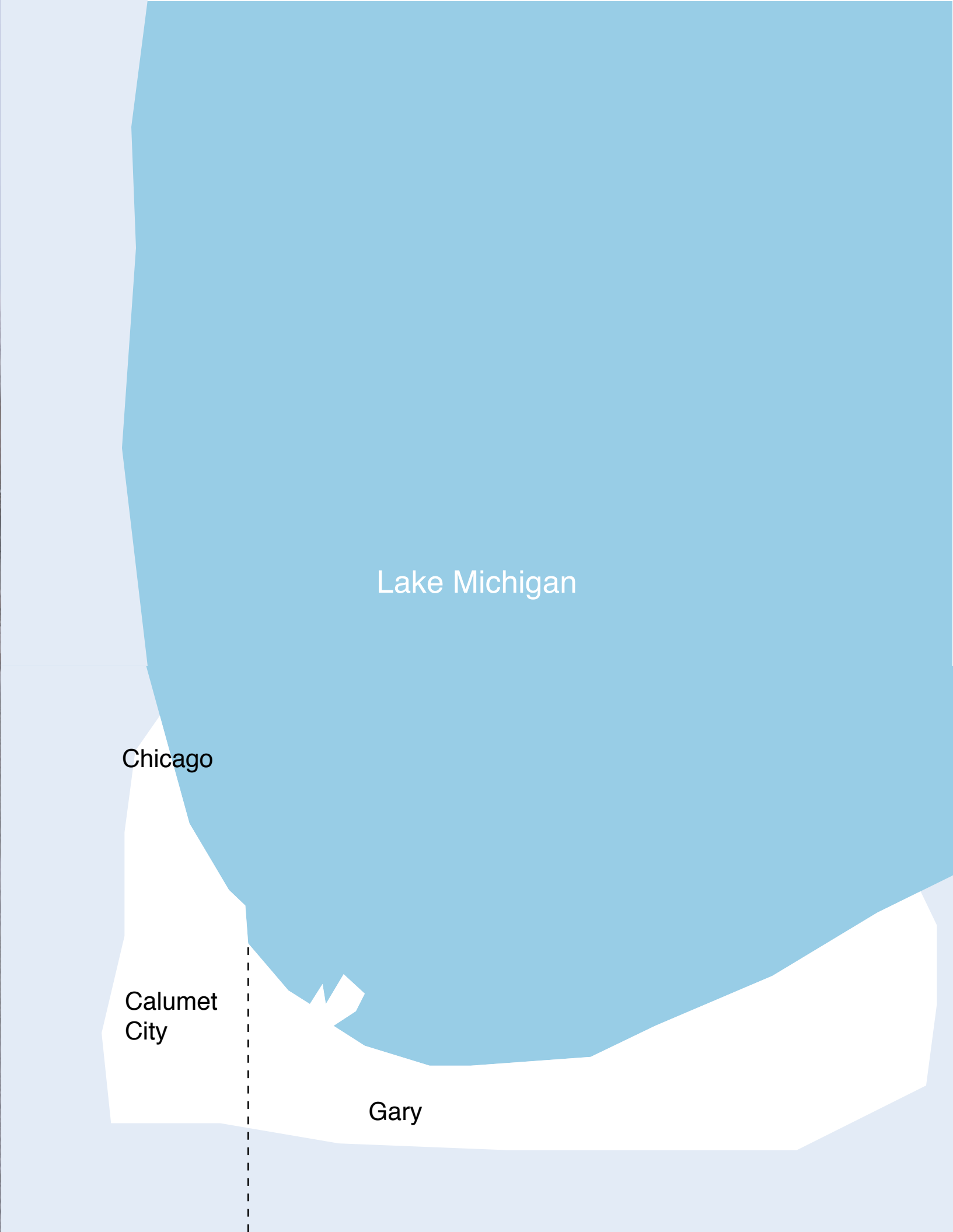
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The Calumet region encompasses the Southeast side of Chicago, South Cook County and Northwestern Indiana in the United States. The bi-state Calumet region boasts proud and diverse communities, important natural ecosystems, and a powerful industrial heritage. Because of its strategic position in the country's geography, the region has been the industrial heart of the Midwest, attracting high investments that increased easy access to transportation, open spaces, and the presence of skilled workers. During that time, prioritization of economic growth over environmental responsibility led to high level of pollutants from industrial effluent and waste that compromised the integrity of the land, water, dunes, and other elements of the ecological landscape of the region. As the region builds on these assets toward a vibrant future for people, wildlife and businesses, the Calumet Collaborative and the IIT-Institute of Design are collaborating to develop new strategies for sustainable regional development.

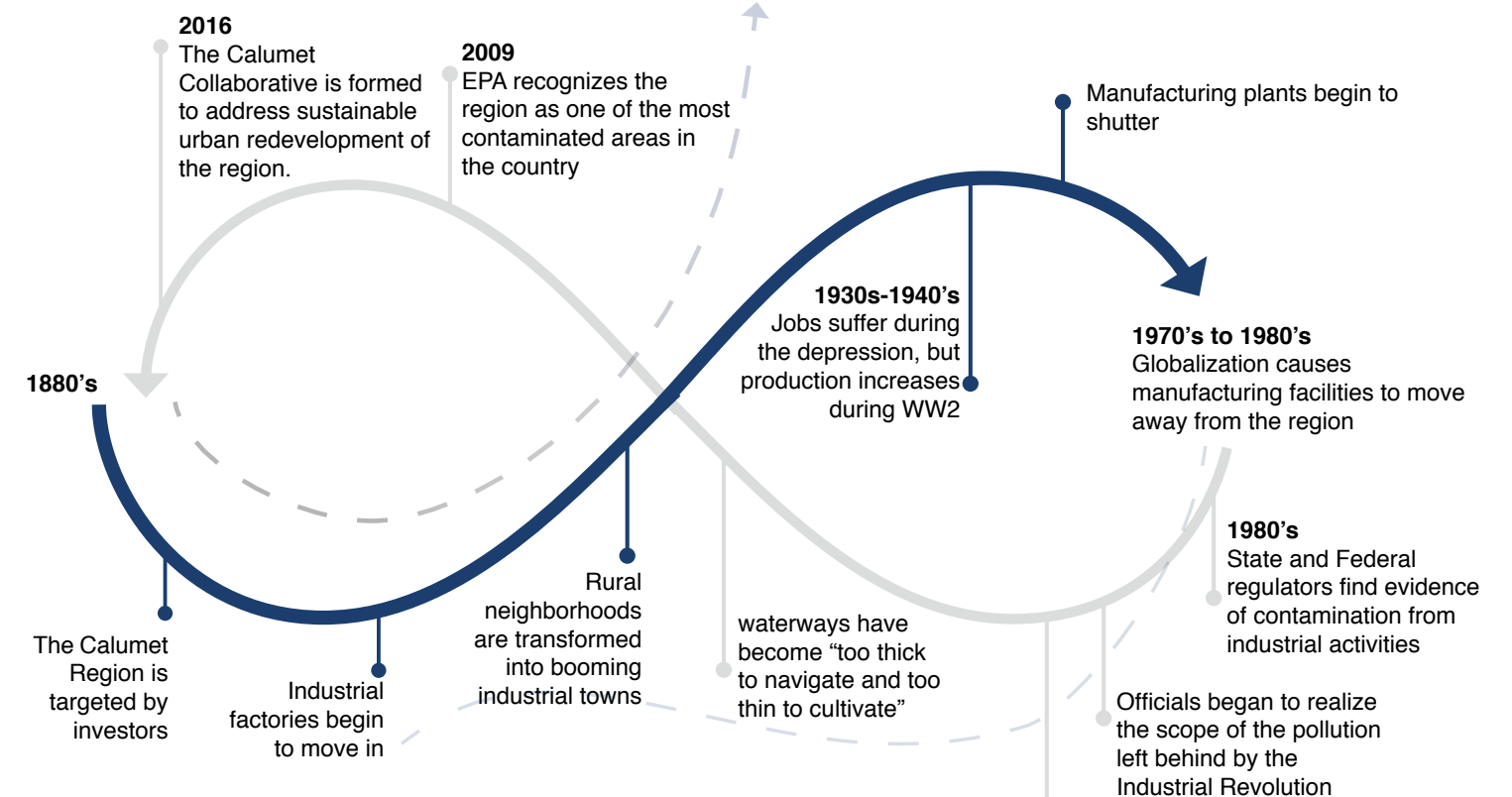


Calumet's Industrial Activity Led to Brownfields

As industrial production activities declined or moved away, they left behind large swathes of vacant and contaminated land that lack economic activities, business interest, and social capital. This post-industrial legacy became apparent in the declining livelihood of the region as a whole. Hazardous effluents and materials, combined with the reduction of job opportunities, continue to prompt residents to move out of the Calumet area while increasing the complexity of restoring a thriving local economy. After years of disinvestment, a patchwork of abandoned industrial, commercial and residential properties has been left behind, with inadequate solutions for re-injecting life into those properties. While some of these vacant spaces are clean parcels or former agricultural land (e.g. "greenfields") being developed at higher paces within the last decade, many others contain multiple levels of contamination (e.g. "brownfields") and can blight not only their immediate surroundings, but also negatively impact the future of the entire region.

Today

the Calumet Collaborative is a bi-state nonprofit organization dedicated to achieving inclusive regional prosperity and improving quality of life in the Calumet region through sustainable development.



Brownfields are directly linked to health risks in the area. Residents begin to realize the extremity of industrial after-effects



By seeking targeted fixes

solutions increase complexity.



Today, many groups are working to remediate these contaminated sites throughout the Calumet region with the aim of putting these brownfields back into economically productive use. Existing mechanisms for redevelopment of contaminated and economically inactive brownfields must garner significant funding and are often done by developers and advocates based inside and outside the Calumet region. While operational and technical processes for remediating individual brownfields have been the focus of many fragmented investments, little attention has been given to the systemic impact in the immediate surroundings.

Regardless of the type of brownfield, a similar approach is taken. A problem is identified, then a solution is generated and implemented. This targeted approach is replicated across dozens of sites across the region. For example, the current approach to remediation is to secure funding and expert resources to survey a contaminated site, create a plan, then take action to decontaminate it. Once cleaned, the site becomes available for redevelopment and productive use. However, redevelopment processes are not as linear as they might seem, and current approaches are causing significant unintended consequences, such as disruption of local economies and gentrification processes. Moreover, many of these unintended consequences cannot be foreseen because the focus on individual sites prevents a broader, systemic perspective. Thus, new complex problems are emerging, and with them new isolated, fragmented solutions. While the current approach to brownfield remediation does provide incremental improvements, there is still an underlying opportunity to promote systemic transformational change. On the following page, there are four high level examples that represent such complexity.



problem

vacant property is abandoned by owner

incremental improvements



targeted fix

new regulations: zombie property laws



side effect

lack of funding and enforcing structure



increasing complexity

maintenance and safety issues escalate



highly contaminated areas



golf course is developed



excessive extraction of water



depletes fresh water resources



methane builds up in landfills



gas is burned or vented



increase CO₂ release



accelerates climate change



remediation is extremely costly



large external investors secure site



resources are centered only on the site



residents are impacted by outside investors

Four properties are preventing local redevelopment

The team took a nonlinear, system-led approach to understand complex issues embedded in redevelopment processes of brownfields. Researchers identified several patterns among brownfields in the Calumet Region, and explored four of them: former landfills, vacant residential buildings, abandoned industrial sites, and contaminated natural areas. By applying design methods under eight different lenses (ecological, financial, physical, digital, political, cultural, networks and individuals), the team mapped how multiple systems hinder or support redevelopment processes. In these systems, underutilized assets in the regions were identified, and prototyping methods were used to explore how they could be activated to restore local economies. By doing so, researchers were able to uncover seemingly unrelated attributes in the system, and identify patterns across the different prototypes.

Even though no single pattern on its own can summarize the complexity embedded in brownfield redevelopment, the prototyping experiences led to four properties that are preventing local economies to be restored: centralized power, isolated and fragmented external investment, limited perception of multiple values in systems, and lack of accountability and ownership of redeveloping brownfields. While these can on their own introduce new challenges to be tackled, the way they relate to each other increases the complexity in brownfields redevelopment processes. However, by challenging them, new entry points are presented, new opportunities for interventions are surfaced, and new points of reference for intervening in brownfields are created.



Centralized power

Limited perception of value

Lack of accountability & ownership

Isolated & fragmented external investment

Novel approaches should raise new questions

Large efforts to create sustainable and resilient economic development opportunities in the Calumet region have focused on brownfield remediation. However, brownfields can be understood not just as problems of contaminated and unproductive land but as sites where multiple systems intersect. As such, the remediation processes require new systemic approaches, in which the focus of intervention is the redevelopment process itself; and remediating the sites are understood as critical steps, but not the end goal for creating sustainable and resilient economic opportunities. If new approaches are required, then new questions are to be raised. In this page, some of the main questions that guided and framed researchers' explorations are presented.

What if vacant residential lots could empower residents to govern in their neighborhoods?



What if former landfills were used for multiple values generation?



What if contaminated natural areas could connect the community to the environment?



What if industrial sites could be used to absorb external financial investments to the region?



and answers should lead to new opportunities

By engaging in issues of brownfield redevelopment in the Calumet region with new lenses and approaches, researchers were able to identify new patterns that can inform future strategies for restoring local economies. They are presented here as four actionable properties for the system's intervention and impact: symbiotic relations, adaptive growth, self-organizing systems, and values creation. They are not meant to be exhaustive, rather an indication of what's possible given the underutilized assets identified, and the common challenges embedded in existing processes of brownfields redevelopment. By incorporating them, interventions might acknowledge the complexity and multiple systems presented in issues of brownfield redevelopment, while integrating diverse efforts such as community building, job creation, and new financing models, into alternative processes for restoring the local economy in the Calumet region.

These properties challenge existing processes of brownfield redevelopment. As such, they will require new engagements and new types of values being exchanged among stakeholders. Additionally, new infrastructures are necessary to unlock existing practices and overcome fundamental barriers in integrating multiple efforts.

Self-organizing systems

Refers to the spontaneous order that arises from local interactions between parts of an initially disordered or unaffected system.

Symbiotic relations

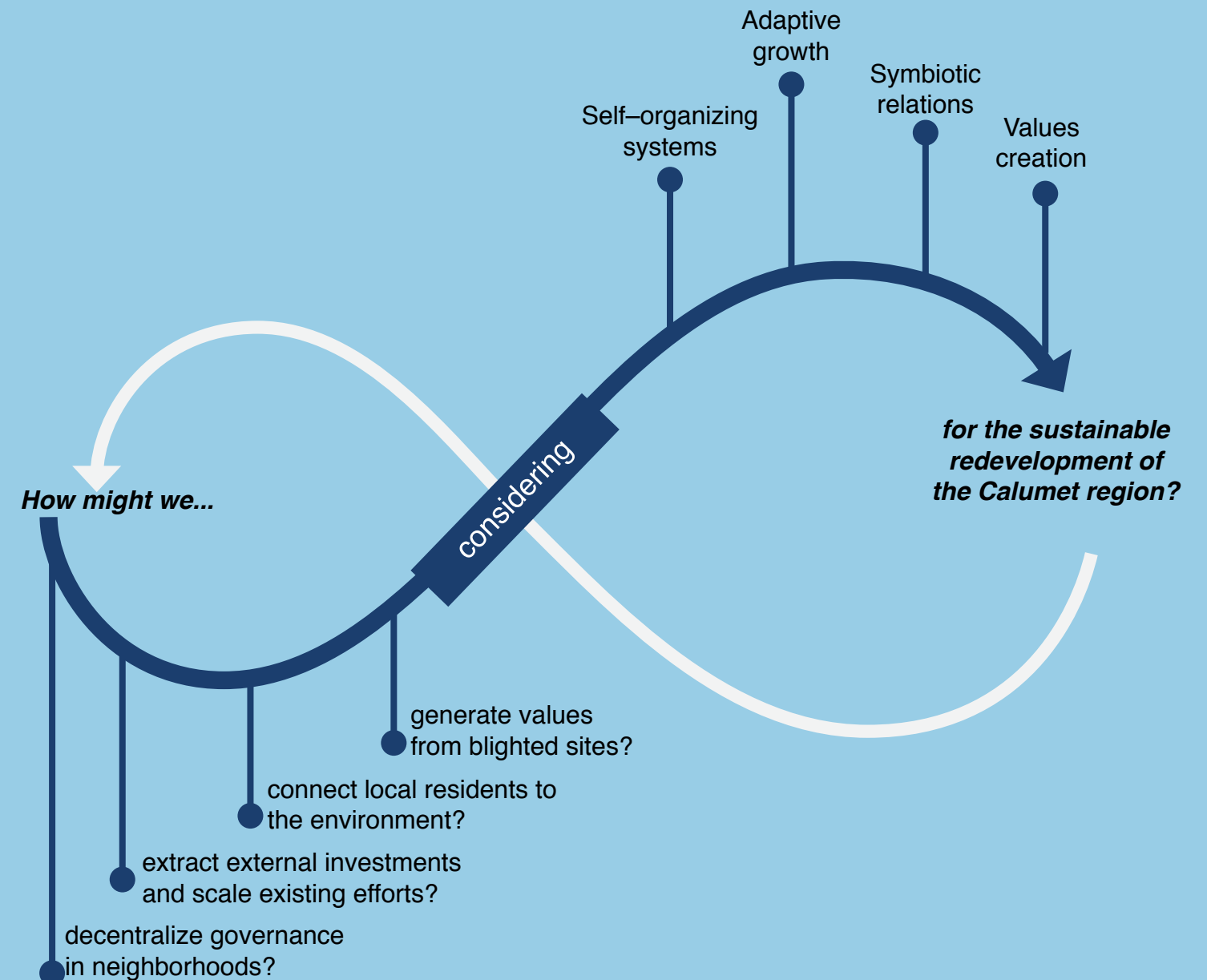
Refers to three types of relationships between two or more agents in the system: mutualism (+ / +), commensalism (+ / 0), and parasitism (+/-).

Adaptive growth

Refers to a growth in which agents gradually become better suited to their environment.

Values creation

Refers to holistic approach to defining value by considering interdependencies among multiple agents in the socio-ecological system.



to restore local economies in the Calumet region

This project proposes brownfield redevelopments as critical paths for regional regeneration with the focus on restoring local economies. Because brownfield redevelopment processes increase the value of the land, they directly impact their immediate surroundings. However, current approaches have been disconnected from the local residents and community organizations. Key decision-makers who are designing large-scale physical infrastructure within the region do not involve citizens and small organizations in the Calumet region. As such, this applied research project aimed to reduce this gap by exploring new strategies capable of integrating dispersed stakeholders to support continuous involvement of local residents, while creating local economic opportunities.

This work in progress can be used to advance future actions, and inform new strategies for brownfields redevelopment processes. Information in this report is more useful under the involvement of experts in design methods, capable of supporting systemic approaches that advance some of the contributions of this project.





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OVERVIEW

We thank all the participants involved in this research project. Their commitment and contributions were critical to the development of this report. We welcome feedback and suggestions that can contribute to move this initiative forward.

A collaboration between:



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