Can the IUB arboretum contribute more to the 40% UTC goal?

Emily Smitheram, Nicole Paulides, Macy Stewart, Kailyn Sherburne
School of Public and Environmental Affairs, Indiana University, E422 Spring 2016

Opportunities and Challenges to Doubling Tree Canopy and other Key Goals

GOAL OF CASE STUDY:

Consider IU's goal of doubling its canopy cover and the future role that the IUB Arboretum and adjoining areas might play in that effort.
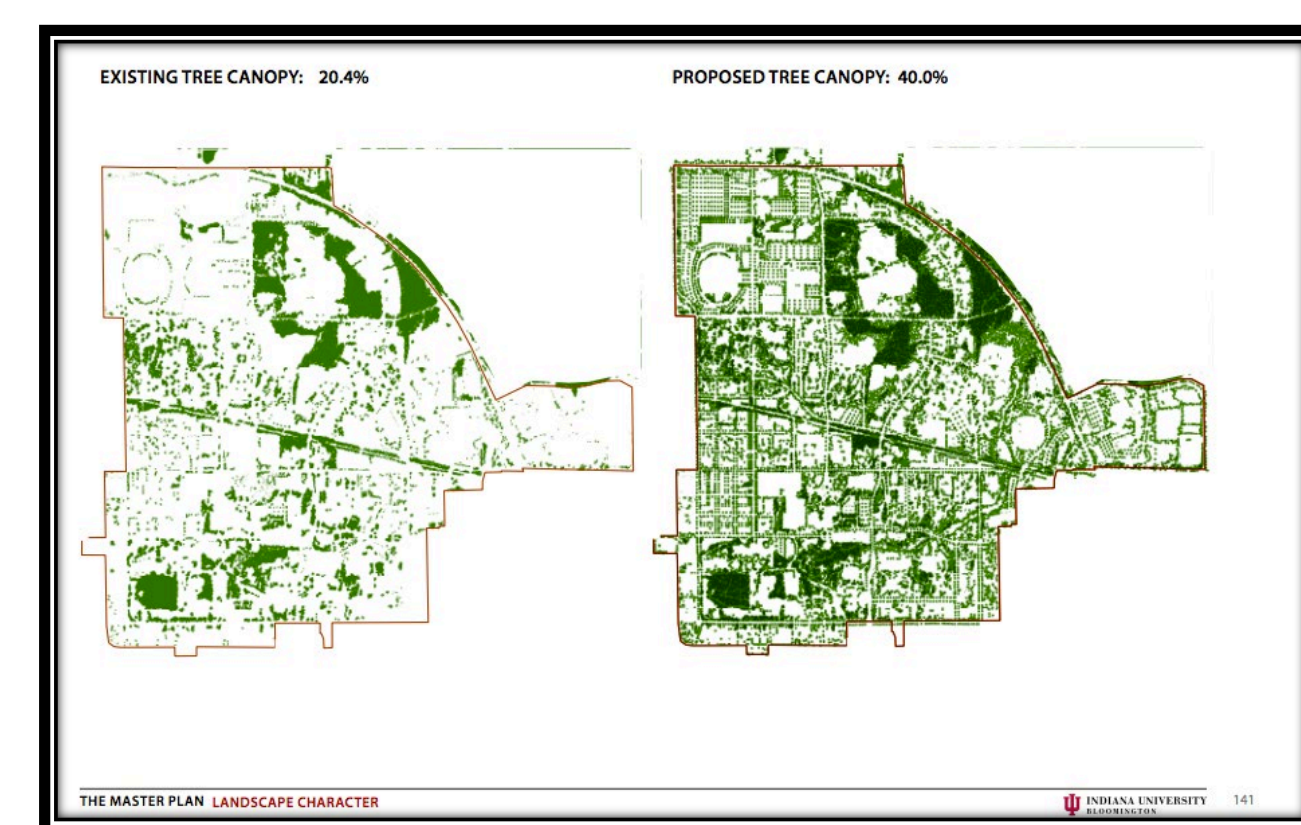

Figure 1. This map of Indiana University Bloomington's campus depicts the masterplan to increase canopy cover on campus

The city of Baltimore accomplished a similar goal that IUB has created, thus can be used as an example for the campus. Ensuring that the goal is possible, probable, and preferable before the project begins will guarantee that the city and other organizations run into as few challenges as possible. In Indiana University's Master Plan, there is little to no information about how the university plans on executing their tree canopy goal. Another problem for Indiana University will be funding. Those in charge of budgeting will be far less likely to allocate funds to tree planting and care if there is not a comprehensive plan. Key challenges that the city of Baltimore addresses that Indiana University will need to consider are:

• Involving outside organizations and agencies to align goals for the city of Bloomington, Monroe County, and the entire state of Indiana

• Responsible and reliable sourcing of trees and labor

• Ensuring the protection and focus remains on existing trees where it is necessary

• Integration and evolution of regulatory frameworks

BENEFITS OF DOUBLING CANOPY:

• Air pollution removal will increase from 19,720 pounds per year to 41,414 pounds per year.

• Carbon storage and sequestration will more than double, increasing from 9,333 total tons stored annually to 19,600 tons stored, and from 73 total tons sequestered annually to 153 total tons sequestered

• Storm water runoff will be reduced, decreasing the amount of silt and pollutants that enter into the Jordan River and Cascade Creek

• Doubling the tree canopy on campus will save $2.3 million that would be spent building alternatively necessary storm water detention facilities

Mission of IU Cox Arboretum and It's Role in Meeting Urban Tree Canopy Goal

The campus urban tree canopy goal and the goals of the arboretum go hand in hand. The ecological, aesthetic, and environmental benefits reaped from planting and maintaining trees are the same benefits that the arboretum is already achieving. Communicating the goals of the arboretum to shareholders, stakeholders, and those who budget money to the goal will play a key role in achieving the goal. The arboretum is living proof that increasing the tree canopy is an important thing to do.

Indiana University describes its arboretum as a 'green matrix' forming the ecological framework of the campus and its ties to the entire region. Indiana University's goal for the arboretum is to blend in with the surrounding regional landscape and also serve as a largely diverse ecosystem of human and plant-life interaction. Some major goals of the IU Arboretum are:

• Reflect a greater biodiversity of tree and herbaceous species on campus

• Improve woodland management and serve as an example

• Restore and manage degraded landscapes

• Provide student learning and research opportunities

• Support the University's sustainability goals for environmental quality and land use

Methodology & Implementation

What needs to be kept in mind when setting a canopy goal is similar to Baltimore's plan. Is it possible? Is it probable? Is it preferable?

For this space on campus the twenty percent increase is more than possible. As long as IU has a fund to plant and maintain the trees there should be nothing preventing the trees from being planted to increase the canopy cover, making the project possible. Student involvement in the planting process could also contribute to the possibility of this project being successful. This goal is probable because IU wants to increase the canopy and the arboretum and adjoining areas have plenty of room to accommodate the increase in trees. Increasing the canopy in this space would add to the beauty and give multiple benefits to the campus and it is preferable. Our campus is already appreciated for all the trees, an addition of trees would make the campus more attractive to current and future students.

PLAN PROPOSAL

Set a twenty year goal to achieve the twenty percent canopy goal. This means that IU will need to plant around five trees a year in the arboretum and the adjoining areas.
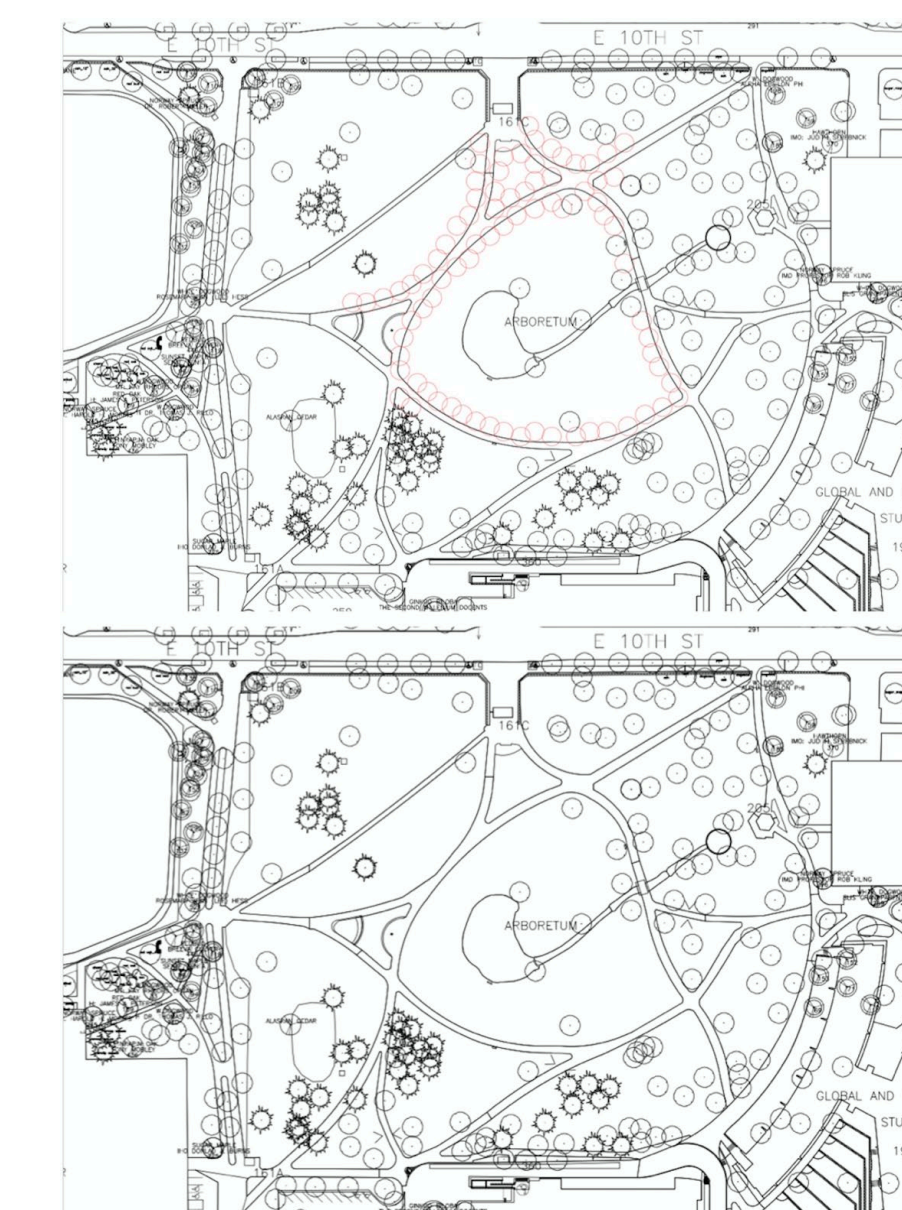

Figure 2. This figure displays the campus with a 20% increase in canopy cover

Possible and Important Threats

One problem is harsh growing conditions that limit tree survival. The plans as to where to plant more trees are all designed along high traffic pedestrian walk ways. Another issue is that they will be affected by de-icing salts that are put on the sidewalks, those chemicals are harmful to the trees but necessary for the students walking on it.

An outside threat to the master plan are pests, pathogens, invasive plants and disease that can have sudden and devastating effects, especially if there is a lack of diversity. If a disease was to arise that affected a certain species it would wipe out a majority of their trees. Another issue is the lack of education regarding the benefits of trees. Not many students or citizens truly understand the benefits of trees on Indiana University's campus. If there was more education provided the trees would have a better chance at being taken care of. Tough city conditions also pose a threat to the trees wanting to be planted by having root damage, soil compaction, under or over watering, and reduced air and water quality, which affects the trees health.

Other threats to the master plan is the expansion of Indiana University's campus. With a growing campus there will be less greenspaces to make room for more buildings in the later future. By looking at this photo you get a complete idea what Indiana University intends to do in the future. The tan colored buildings are proposed buildings that not all have been built yet. This is limiting the greenspace available to Indiana University in the future, however there is a good amount of greenspace to achieve their current goal.
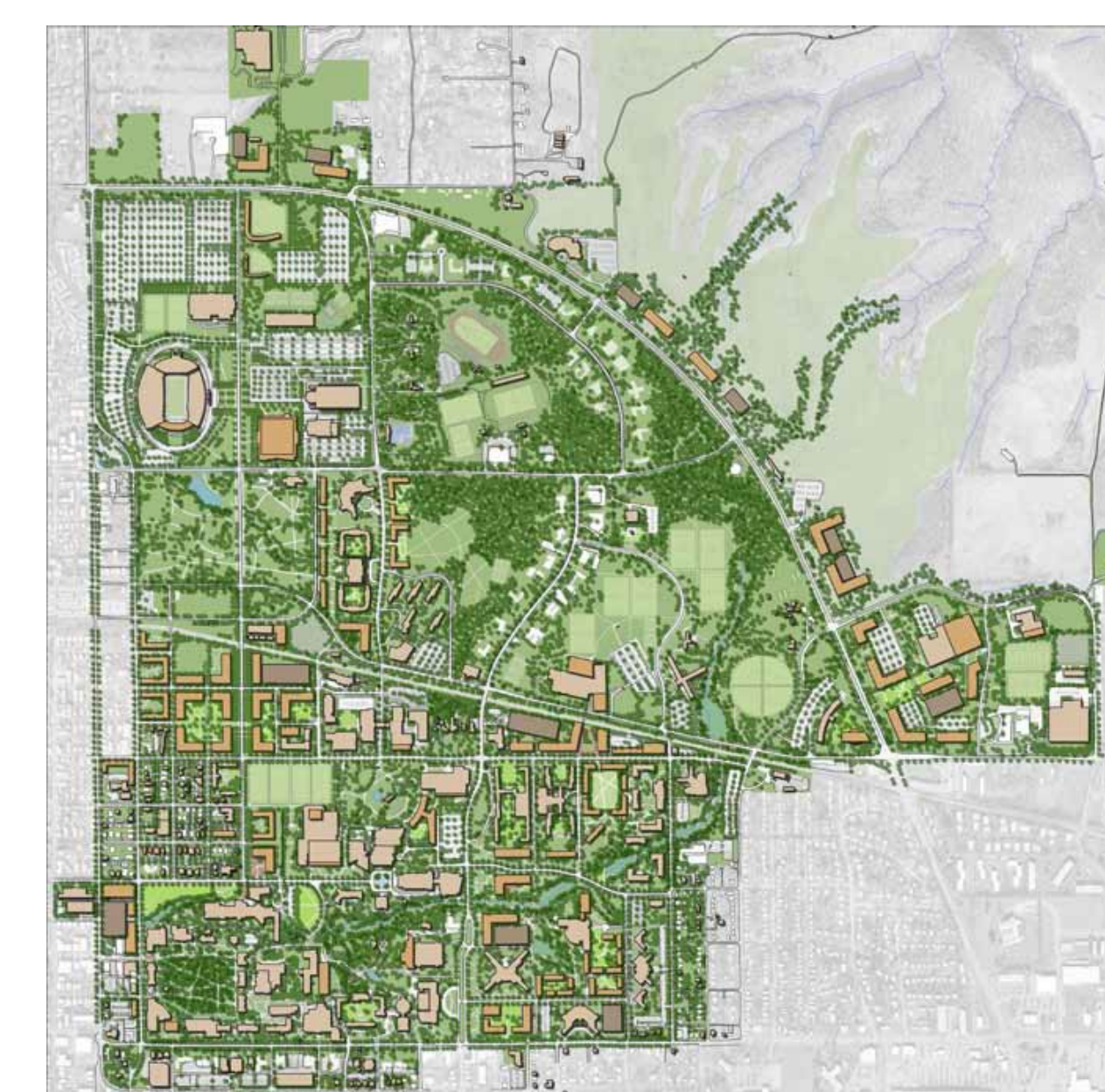

FIGURE 3. This image is a map of IUB campus

Final Summary

We recognize that the master plan has considered a lot of possibilities that can arise in the future. We have some final thoughts and recommendations that they should consider. They could look at other successful cities that have taken on a 'master plan' this size. Taking a look at what Baltimore did as a city to achieve their tree canopy and figuring out what can work for Indiana University and what cannot. Adopting the three P's stated in earlier in the text would be step number one for Indiana University. There is little to no information on what or how Indiana University plans on implementing this plan.

Indiana University also needs to stick with the plan on biodiversity. The campus does not have a great number of diverse tree species and that needs to change. They will need to ensure the protection and maintenance of the existing trees that they have now. That is where the importance lies. Planting more trees will be beneficial in canopy cover as long as they continue to maintain the existing ones. Integration and evolution of regulatory frameworks is something Indiana University can take from Baltimore as well. Involving outside organizations and agencies to align goals for the city of Bloomington, Monroe County, and the entire state of Indiana would also be beneficial.

Also the funding is going to be a major problem for Indiana University to start planting. Those in charge of budgeting will be less likely to allocate funds to tree planting and care if there is not a comprehensive plan that outlines something similar to Baltimore. We suggest outlining a plan similar to Baltimore before beginning this project. If they do not have the funding they should not try to start this without a clear idea if Indiana University can afford it. Also, communities adopting a tree canopy goal should submit a one-time implementation plan to their State that includes the following information: the percent increase in canopy cover and specified time intervals for attainment, the relationship of the canopy goal to other local goals, ordinances or regulations, identification of priority sites for implementation and rationale for selection, any resolutions, motions or minutes from governing bodies or boards endorsing the participation in the program, the goals set by the community and plans for implementation, and listing of outreach, educational, and funding opportunities. If Indiana University does these things they will be successful in achieving the canopy cover.

Literature cited

"A Case Study in Policy-making with Public and Private Partners." (2010): n. pag. City of Baltimore Recreation and Parks. Web.

"Indiana University Bloomington Campus Master Plan." (2010): n. pag. *Indiana.edu.* Web.

TreeBaltimore. Baltimore City Recreation and Parks, n.d. Web.

Merriam-Webster. "Arboretum". Merriam-Webster, n.d. Web. 24 Apr. 2016.

For further information on IUB'S Master Plan visit the following URL:

http://masterplan.indiana.edu/iub/landscape.pdf