

**The University as a Model for Sustainability and Catalyst for Development in the
Surrounding Community**

A Research Paper submitted to the Department of Engineering and Society

Presented to the Faculty of the School of Engineering and Applied Science
University of Virginia • Charlottesville, Virginia

In Partial Fulfillment of the Requirements for the Degree
Bachelor of Science, School of Engineering

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Spring 2020

On my honor as a University Student, I have neither given nor received unauthorized aid on this
assignment as defined by the Honor Guidelines for Thesis-Related Assignments

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Introduction

Environmental concerns have become a forefront issue worldwide as the detrimental consequences of climate change have exacerbated the need for sustainable solutions and efforts. As current trends in resource use and societal behaviors impact the environment in unsustainable ways, there is an increased pressure for communities to find solutions and invoke sustainable development. However, since the first international conference on environmental issues in 1972 (Jovovic, 2017), after four decades of efforts in sustainability, progress has been very unexceptional as climate change, biodiversity loss, deforestation, water quality degradation, and air pollution continue to stir public concern. The concept of sustainable development suggests several principles for implementation including, increased significance of sustainable efforts at the local and regional level, public and stakeholder participation, and integrative approaches to regional challenges (Peer, 2012). These principles essentially play on the idea of “think global, act local” in the context of sustainable development. Given the urgency of environmental destruction, opportunities are emerging for local stakeholders and institutions to engage as change agents for sustainable development.

When it comes to sustainability, the responsibility of implementing policies and regulations to drive change, is typically placed onto governments and corporations. However, Universities have also begun to emerge as core change agents within society. The influence of Universities has grown significantly with this generation putting a greater emphasis on higher education than ever before. More millennials are attending college than any previous generation, with 40% of millennial workers in 2016 having a bachelor's degree, as compared to 26% of baby boomers in 1985 (Hoffower, 2018).

Universities are most notable for possessing provisions of both human and intellectual capital (Peer, 2012). It is undeniable that universities have clearly demonstrated themselves as core contributors to research and technological advancement. In addition to educational services and research, their regional impact is expressed through the people they hire as well as how they engage with the community through their financial and physical investments (Jackson, 2018). Universities have become important public figures with wide arrays of resources and influence at their disposal. With this, universities can be recognized to have the capacity and obligation to become the core actors in shaping regional socio-economic infrastructure and becoming essential catalysts and models for regional sustainable development. In this paper, I take a look at the key areas of focus where universities can excel to become core stakeholders for the development of regional sustainability. A case analysis of the University of Virginia's sustainability plan will then serve as a strong example of a regional sustainability strategy.

The Role of Higher Education in Knowledge Transfer

In order to fully understand the scope and impact of universities on the surrounding community, we must first take a look at their most fundamental role as an institution, as vehicles for research and knowledge transfer. The research piece by Verena Peer and Gernot Stoeglehner, describes that graduates emerging as stakeholders, planners, consultants and decision makers from universities play a direct role in the proliferation of knowledge within a region. These graduates typically partake in "regular" academic education as provided by the university, and the diffusion of new knowledge faces great delays if these graduates do not regularly participate in learning activities throughout their life. Lifelong learning as opposed to "regular" academic learning is described as "limited in capacity" due to the dependencies on the graduates' willingness to participate. Learning and knowledge transfer is essential in achieving regional

development as it is a key factor in changing mentalities and behaviors. Traditional forms of learning such as hearing presentations and reading, only account for 5-10% of knowledge remembered, whereas self-activity is upwards of 80%.

Traditional Learning	Lifelong Learning
The teacher is the source of knowledge	Educators are guides to sources of knowledge
It is teacher centered	It is learner centered
Learners receive knowledge from the teacher	People learn by doing
Learners work by themselves	People learn in groups and from each other
Tests are given to prevent progress until students have completely mastered a set of skills and to ration access to further learning	Assessment is used to guide learning strategies and identify pathways for future learning
All learners do the same thing	Educators develop individualized learning plans
Teaching pedagogies are standardized	Teaching pedagogies are individualized
Teachers receive initial training plus ad hoc in-service training	Educators are lifelong learners. Initial training and on-going professional development are linked
“Good” learners are identified and permitted to continue their education	People have access to learning opportunities over a lifetime
Learning is at a group pace	Learning is at a individual pace

Traditional Learning vs Lifelong Learning (Pablos, 2016)

The development of a lifelong learning model allows “more weight on unique human qualities such as knowledge creation” (Pablos, 2016). Knowledge application and knowledge creation is a normal part of regional development and it is a university’s role to develop this with their graduates. The development of the students into modern professionals means they are “knowledge workers for whom lifelong working implies lifelong learning” (Pablos, 2016). In addition, Peer and Stoeglehner describe the concept of “ownership” in knowledge, where actors emerging from universities’ learning process, should “own” basic values of sustainability.

Therefore in terms of regional sustainability, this creates an avenue for universities to include more bi directional interaction between the university and community and allowing for students to learn sustainability through a local context. Universities are situated at the apex for academia and education within a community, they become the ideal vessel for how learning theory can be implemented into developing more collaborative research and learning processes.

Universities as Economic Engines

Moving on from universities as an academic force, they also play a huge economic role within communities. There is extensive literature available that examines universities as economic engines. The research piece *The university as the engine of growth: an analysis of how universities can contribute to the economy* by Harm-Jan Steenhuis and Denis O. Gray describes that a strong university system has the potential to stimulate regional economic growth. Though the economic activity of universities can be evaluated by focusing on direct employment and expenditure, as Jaison R. Abel and Richard Deitz states in *The Role of Colleges and Universities in Building Local Human Capital*, their economic influence actually goes beyond these standard effects in that they can help build on the invaluable resource of human capital. Universities can contribute to the economic growth of a region through its contribution to human capital, and in particular, referring to deepening the skills and knowledge of its residents. In addition, technologies and research activities also greatly contribute to local economic activity. This is described as a localized spillover effect from innovative research activities. The spillover of knowledge from research and innovation at a university attracts new businesses and startups seeking access to these research activities and the human capital from universities. The connection between the academic process of knowledge transfer and universities' economic impact is clear. As Steenhuis and Gray point out, many regions within the USA have regional development plans based on creating high technology centers, and therefore high paying jobs. With success stories like Silicon Valley, we can see this trend toward a more knowledge driven economy. With this shift, we can evaluate the increasing importance of academic institutions like universities within economic regional development. With such a strong

economic presence, universities can use this economic leverage in regional sustainable development.

Social Influence Through Community Engagement

The final piece in establishing the groundwork for evaluating the capacity of universities as a core actor in sustainable development, focuses on their social influence and responsibility. Increasingly, universities are expected to engage with both industrial and regional partners. As Ben Jongbloed has noticed in his piece *Higher education and its communities: Interconnections, interdependencies and a research agenda*, the communities that are relevant to a university is one where there is expectations from both sides. From this definition, we can examine the communities as stakeholders of the university itself. Starting with the core of the university, its community of students is universities' most important stakeholder. The other important stakeholder would be the government as its main funder. The government can be looked upon to represent several different communities including health, industry, and culture. As Jongbloed states, these stakeholders have laid out the expectation to “ensure that higher education meets the interests of students and society in general,” and therefore highlighting the social responsibility put onto universities as “public characters.” The consideration of universities as “public characters” therefore means that they do indeed have a social obligation to not only their most apparent stakeholders, but towards outreach and the regional community. The agenda of community engagement is referred to by many, including Jongbloed, as universities' “third mission,” beyond teaching and research. With the shift of university agendas also including this “third mission” implies the goal of community and regional development. With the established roles of universities in mind, we can begin to piece together each of these roles and

responsibilities and how they are interconnected in order to evaluate the potential of which universities can become a core model and driver for developments in regional sustainability.

Methodology

With the established areas of influence in mind, in order to discuss how each area plays into the overall potential of a university as a model in regional sustainable development, I will conduct a case study analysis of the University of Virginia's comprehensive sustainability plan. I have gone through the overall outline for the UVA sustainability plan, the sustainability action plans, the yearly annual reports, and impact reports related to this initiative. The sustainability plan is evaluated against the established core areas of influence to determine the effectiveness of incorporating each area in the developments of sustainability.

UVA Sustainability Case Analysis

The University of Virginia, a public research university in Charlottesville Virginia, whose mission is described to "advance human knowledge, educate leaders and cultivate an informed citizenry" (About the University, 2019). UVA tackles this mission through its competitive education program and research that "focuses on intellectual and societal challenges that impact the greater good and creating new knowledge that moves the world forward" (About the University, 2019). In 2016, UVA launched its first comprehensive sustainability plan (University of Virginia, 2020). UVA's sustainability plan focuses on a three-point framework. The first being "to engage," which focuses on increasing awareness and engagement within the community. The second being "to steward," which focuses on goals relating to ensuring the stability and longevity of the natural environment. Finally, the third being "to discover," which focuses on enhancing sustainability research and curricula development.

As environmental concerns continue to take on a greater importance, including a sustainability plan in an institutional agenda becomes essential for all universities across the board. The increased societal expectation for universities to fulfill their “third mission” means that universities must do more than have their agendas comply with sustainable policies. In order for universities to emerge as core stakeholders in regional sustainability, they must have strong long term plans that incorporate collaborative knowledge transfer, sustainable economic initiatives, and community engagement. Since the launch of UVA’s sustainability plan, it has exemplified the effectiveness of this framework through the collaborative work accomplished.

Initiatives for Knowledge Transfer

Although individuals have a responsibility to society to limit their impact on the environment, not every individual can be interested or informed enough to enact change. It then becomes the responsibility of larger institutions within the community to enable these individuals. UVA, as a large public institution, possesses the resources to initiate a transfer of knowledge in the field of sustainability in order to increase awareness and engagement. Individual attitudes towards sustainability can be influenced through ownership of basic sustainability knowledge and communicative interactive learning (Peer). As an example of interactive learning, through UVA’s the Global Sustainability curriculum was restructured in 2017 to incorporate UVA grounds and Charlottesville as a learning tool (University of Virginia, 2018). UVA’s Sustainability Plan funding was used to support working group projects in the curriculum for initiatives such as paper towel composting in residence halls, research in nitrogen reduction strategies, and a community H2O water bar (University of Virginia, 2018). These projects become lifelong learning opportunities as they are able to reiterate their projects and ideas with new knowledge. With UVA playing an active role in enhancing sustainability focused

teaching and curriculum development, over 270 community focused sustainability projects were pitched by students in 2018 (University of Virginia, 2019).

Sustainable Economic Strategy

For environmental sustainability to flourish, economic sustainability is absolutely necessary. However, incorporating sustainability and new developments into a community can be a financial strain on individuals or groups, and economic success within a region becomes a huge factor in cultivating development. Although determining how to foster the economic success of a region is wildly complex and intertwined with many other factors, as large economic entities, universities undoubtedly play a vital role within the local economy. A critical component of a region's economic success are its levels of human capital (Abel, 2014). Universities directly contribute to supplying human capital to the region through either graduating students, or knowledge spillover from research attracting migration to the area. Initiatives to fund research activities that relate regionally, becomes an essential part in developing a sustainable economic strategy for environmental sustainability. The UVA sustainability plan tackles this through the development of several grants and funds aimed at supporting sustainability research such as the Sustainability Research Development Fund, and Equity and Environment Fund (University of Virginia, 2018). Their effect as an economic engine has allowed for an increase in sustainable research since 2016, and according to UVA's 2019 Impact Report, UVA had granted \$300,000 toward sustainability related research and development. UVA is clearly a powerful economic force which has invested a significant amount of money over the years toward a strong long-term strategy toward economic growth through research.

Community Engagement and Outreach

As public facing entities, increasing engagement and social outreach is essential in effectively incorporating their knowledge base and new developments into the surrounding communities. As society places more value onto universities as public figures, their social responsibility becomes more closely scrutinized with particular focus on the contribution they make to the social-economic well-being of their environment (Jongbloed, 2008). Therefore, in order to effectively foster regional sustainability goals, universities must align their sustainability plan with the social aspects of the community. UVA's sustainability plan successfully addresses this through the plan's "engage" pillar. The implementation of engagement is very effective in this case as UVA works to develop programs that encourage bidirectional communication with the community. Not only does the plan work to increase awareness beyond Grounds, but also works to gain perspective through engaging with local neighborhoods in regular dialogues about incorporating diversity and equity issues with sustainability. As an example of this, in 2018, UVA hosted the Bicentennial Sustainability Leadership Summit in Charlottesville. In order to create this dialogue aligning social issues with sustainability, the summit brought together nearly 600 attendees including students, alumni, faculty, staff, and community members (University of Virginia, 2018). UVA's efforts to incorporate social issues with sustainability can also be seen through collaborations between the Civic Engagement Subcommittee and the Multicultural Student Center. Their collaborations include events such as "Hoo's at the Table: Sustainability Edition." The panel featured local sustainability practitioners of color who shared their experiences and networked with students. This ability to bring the community together to diversity and broaden these conversations becomes one of the most powerful tools for universities in stepping up as local models for sustainability.

Effectiveness

The effectiveness of UVA's sustainability plan can be seen through its achievements in sustainability since the plan was enacted. UVA is ranked number 1 in the ACC and 18 within the country for total renewable energy (University of Virginia, 2018). Since the enactment of UVA's Delta Force Energy Efficiency Program, it has saved 180,000 MTCDE (Metric Tons of Carbon Dioxide Equivalent). UVA has decreased its energy use intensity by 12 percent since 2010 which estimates to about \$25.6 million in energy savings. Its nitrogen footprint has also been reduced by 17% since 2010 (University of Virginia, 2018). What these stats show is that UVA's sustainability plan is indeed producing a positive impact toward sustainability and are on track to meet their sustainability goals within the next decade.

Conclusion

As the public puts a greater responsibility on universities to address the sustainability issue, it becomes essential for them to not merely comply with policies, but to use their wide array of resources and influence as models and change agents for the issue. UVA's Sustainability Plan has become an example of success through their robust long-term strategy. However, this analysis was limited in that it was entirely evaluated from the perspective of the University. Moving forward on this topic, it would be beneficial to incorporate outside case studies evaluating the plan. Though not perfect, UVA's plan shows an overwhelmingly successful model of incorporating sustainability with knowledge transfer development, economic growth, and community engagement.

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