

# What is infrastructure, anyway?

As the US Congress considers Biden's Infrastructure Plan, we want wade into the discussion. One of the critical issues facing the legislation concerns the definition of the word. For many, infrastructure refers to physical things like roads, bridges, airports, water and wastewater treatment systems, as well as electrical and telecommunications grids. Certainly, those items meet the contemporary definition of the term.

According to Merriam-Webster, "The Latin roots of infrastructure mean simply 'underneath or below the structure'" (<https://tinyurl.com/4e5ny4et>). In the Cold War years following WWII, infrastructure was "initially...used in the context of building military bases, railroads, and airfields for use by NATO forces."

From that initial use of the word it quickly came to refer to the types of uses we listed in the opening paragraph of this column.

As social scientists we want to use this column to assert that even more important than physical infrastructure is the human infrastructure: the human resources that lie "underneath or below the structure" of society. Social scientists refer to these resources as human and social capital. Human capital is found in the capabilities and knowledge that are a part of each person. Social capital is the relationships and connections that that enable individuals and groups of people in society to interact and function efficiently and effectively.

Without a strong human infrastructure (some call it soft infrastructure), the physical infrastructure we spend our money on will likely be used suboptimally. In our reading of history, this is not a new concept even if the word "infrastructure" was not attached to it.

The Northwest Ordinances of 1785 and 1787, that governed the settlement of people of European ancestry in the land north and west of the Ohio River, were adopted by Congress and recognized the importance of investing in human infrastructure by reserving Section 16 (each section is a square mile) of each 36 square mile township for the support of public schools for the children of township residents.

The Morrill Land-Grant Act of 1862 in the middle of the Civil War was designed to provide for the "endowment, support, and maintenance of at least one college where the leading object shall be...to teach such branches of learning as are related to agriculture and the mechanic arts...in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions in life" ( <https://tinyurl.com/c4wm8ayh>). Agricultural Research Stations were established in 1887 followed by the establishment of the Cooperative Extension Service in 1914.

The word "infrastructure" was not used in these legislative acts, but, nonetheless, the result was the significant building of human infrastructure among the new residents of this land. Roads, rural electrification, rural water systems, and wastewater treatment plants would often come later using a combination of local taxes and federal support. In this case the building of physical infrastructure in rural areas continues to be built on the earlier sustained development of the building up of the human infrastructure of rural communities.

We cannot talk about the role of the Northwest Ordinances of 1785 and 1787 and the establishment of the 1862 Land Grant Institutions along with the Agricultural Research Stations, and the Cooperative Extension Service in the development of human infrastructure in rural areas without acknowledging that these policies and services were not extended to everyone.

The Northwest Ordinance which provided for the development of human infrastructure for the newcomers to the land, came at the cost of the destruction of human, social, and cultural

capital (cumulatively human infrastructure) of those persons and nations forced from their ancestral lands to make way for the new, more powerful residents. In addition, those inhabiting the land when the settlers arrived lost control of land that had been held by their ancestors for generations and were forced westward and into conflict with other groups.

Farmers of African descent were excluded from the building of human capital through participation in the programs and services of the 1862 Land Grant institutions until the establishment of separate land grant institutions in the late 19th century. For the descendants of the original population of this country it was in the latter half of the 20<sup>th</sup> Century before Land Grant Institutions attuned to their needs were developed.

The key to the current legislation is its attention to both physical and human infrastructure for the whole population. These linkages have the potential to result in benefits that are greater than a piece of legislation that addresses just one or the other, or one group and not others.

While some worry about the cost of the legislation, we believe it has the potential to spur greater economic activity with the cost becoming a smaller percentage of GDP as the economy grows. The cost of doing nothing could be far greater in the long run than the price of adopting the full package today.

*Policy Pennings Column 1080*

*Originally published in MidAmerica Farmer Grower, Vol. 37, No. 326, June 11, 2021*

*Dr. Harwood D. Schaffer: Adjunct Research Assistant Professor, Sociology Department, University of Tennessee and Director, Agricultural Policy Analysis Center. Dr. Daryll E. Ray: Emeritus Professor, Institute of Agriculture, University of Tennessee and Retired Director, Agricultural Policy Analysis Center.*

*Email: [hdschaffer@utk.edu](mailto:hdschaffer@utk.edu) and [dray@utk.edu](mailto:dray@utk.edu); <http://www.agpolicy.org>.*

Reproduction Permission Granted with:

- 1) Full attribution to Harwood D. Schaffer and Daryll E. Ray, Agricultural Policy Analysis Center, Knoxville, TN;
- 2) An email sent to [hdschaffer@utk.edu](mailto:hdschaffer@utk.edu) indicating how often you intend on running the column and your total circulation. Also, please send one copy of the first issue with the column in it to Harwood Schaffer, Agricultural Policy Analysis Center, 1708 Capistrano Dr. Knoxville, TN 37922.