

# Engineers' Role in Devolution and County Development

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## Abstract

Engineers play a crucial role in the development and can enhance the fruits of devolution when they are employed and actively involved at the county levels. The current study explores the roles engineers can play in the county development plan as part of the efforts in accelerating sustainable economic recovery. This study uses a systematic literature review analyzing engineers' roles in the USA and China counties. The research also uses interviews to understand how engineers contribute to development at the county levels. The results from the literature review indicate that engineers in developed countries contribute significantly from different levels of the economy, as they play a crucial part in community developments, which result in national-level primary infrastructure developments. The interviews reveal that engineers are ready to provide remarkable insights on devolution and contribute to surmountable development at the county level, as it is at the national level. This study reveals that there is a need to have engineers working on manufacturing, food security, health sector, and affordable housing and be involved in policy formulation at the county levels. Working with engineers in the community will also help reduce the rampant unemployment cases amongst graduate engineers.

**Keywords:** Devolution, Sustainable Development, Economic Recovery, County Development, Policy Formulation.

## 1 Introduction

County engineers play crucial roles in their respective job areas. The engineers' skills, expertise, and responsibilities reflect the needs, objectives, and activities of their respective counties where the engineers are employed. Devolution ensured equity in employment and distribution of the workforce. Most significantly, devolution ensured every county could use its experts to address its specific needs (Ngigi and Busolo, 2019). This consequently helped to address the entire nation's needs equally, thus achieving uniform development in all sectors. Important lessons can be drawn from the USA and China, which can help understand the role of engineers in devolution and county development in Kenya. The main objective of the study is to understand engineers' role in devolution and county development. The current study's objective is achieved by reviewing the roles played by county engineers in the USA and China and exploring different counties in Kenya and how the Kenyan engineers use their opportunities to realize their role in devolution and county development. Involvement of engineers in that capacity not only leads to self-sustaining economies at county levels, but also has immense contribution in forming the basis for growth of economies that dropping. Engineers play a critical role at county, national and multinational levels both in the technical and administrative aspects to ensure solutions have been created that enhance economic recovery and growth.

## 2 Methods

The current study used a qualitative research design to gather and analyze the required data. In particular, a systematic literature review and interviews. Six articles from the USA and China were used to gather data on how the two model countries' engineers contribute to their countries' development and the nations at large. Face-to-face interviews were challenging to conduct due to the restrictions arising from the Covid-19 pandemic. Consequently, the interview questions were administered through mobile phone call sessions with six participants, each selected from six randomly chosen counties in the Republic of Kenya. The interviewees were selected using the convenience sampling method as depicted by Stratton (2021) since the researchers were interested in the participants capable of providing the expected answers to the interview questions. All the participants were engineers in different fields and employed by their local county governments. The sessions

were scheduled to last for a maximum of 30 minutes. The researchers used open-ended questions and sometimes asked follow-up questions in areas that required more clarity. This made it possible for the researchers to exhaust all the areas that were considered significant for the current study. The names of the counties and participants were redacted for anonymity as the research was not limited to the specific counties studied.

### 3 Results

#### **Engineers' Roles in County Development in the USA and China**

Developed nations such as the United States of America and China with devolution-like governance systems became world economic powers due to the utilization of professionals such as engineers at their respective county jurisdictions, in addition to those at the federal levels. According to the National Association of County Engineers (2021), the US has 46% of the road and 40% of bridges under county engineers. This makes them the most prominent single stakeholders in charge of construction, expansion, maintenance, and rehabilitation of local roads and bridges. Han et al. (2020) reveal that county public workers include highway superintendents, transportation directors, highways and road supervisors, public works consultants and directors, highway officers, and road operations officers in the US. Other engineers at the county levels also exist where such counties have locally manufactured items or produced energy. Moreover, the National Association of County Engineers (2021) reveals that county engineers are crucial in addressing specific engineering challenges facing each region as they understand the issues and are closer, thus help in providing an immediate remedy when needed. The county governments ensure that the engineers responsible for the production, regulation, and maintenance of the process have the required qualifications and attained the minimum academic achievements.

China is one of the most renowned countries in terms of engineering and innovation. According to Fedasiuk and Weinstein (2020), China produces 600,000 undergraduate engineers each year, compared to the US, which produces 70,000, and India 350,000. While the numbers correspond to the respective country populations, the large number of engineers in China indicates technological power now and in the future. Wang and Li (2019) indicate that the Chinese central government cannot employ all the engineers; hence most of the graduates are employed by the townships and local governments and given specific responsibilities corresponding to the county needs. Wage gaps exist between those employed at the state and county levels but that does not discourage graduate engineers from being employed by the local governments, as revealed by Jun (2017), hence developing their regions. Therefore, the engineers contribute to the development of their counties, which is seen in the general development of the nation.

#### **Interview Results**

##### **Engineers' Roles in County Development**

The researchers interviewed six participants from six randomly selected counties regarding their roles in devolution and how they contribute to the development of their counties. Moreover, the responses obtained from the interviews helped the researchers to connect the roles of engineers in building sustainable economies. The interviewees were asked to indicate their suitability to their specified duties, the contribution of their roles in devolution, and the importance of their roles in the county development.

The county governments employ Kenyan county engineers mainly based on their qualifications, though other graduate engineers work in unrelated areas. Participant I revealed that graduate engineers working in other fields are mainly in such positions because there are few positions to cater to all graduates.

*"I am a civil engineer and I am in charge of all the county engineering and structural developments. However, I know some graduate engineers who work in other fields."*

When asked about their roles in devolution, the participants revealed that they contribute significantly to the equal regional development as envisioned in Kenya. The participants noted that their positions at the counties engineering departments are indicators that devolution is working as they execute their mandates based on the directives of the county governments. According to participant II,

*"My work is crucial in achieving the motives of devolution because my county people have a closer officer who implements processes that meet their needs."*

Participant IV further clarified the point by stating that,

*“Devolution is mainly about giving communities the powers to manage their affairs and to further their developments. I work on projects such water and sanitation, county roads, street-lighting, mining, and agriculture, which respond to my county’s needs.”*

The participants further noted that counties had experienced tremendous developments due to the devolved governance system adopted in the country. The interviewees revealed that it is currently easier to work on various county engineering projects since it is easier to plan and allocate funds for the identified and planned projects. According to participant III,

*“Generally, identification, planning, and executing projects are straight-forward and no politicization of what should be done where or when. The county has developed within the last few years compared to since Kenya’s independence.”*

According to participant V,

*“As a county engineer, I strategically plan on how to address various projects to make it easy to manage the subsequent ones. Moreover, decision-making process is faster and regions are developing at a significant rate.”*

Participant VI revealed that all major county projects depend on the county engineer. According to the interviewee,

*“I look at our roads, then clean water, and then power because other areas of production such as structural development, mining, and farming depend on good roads and availability of water. This has been easier to achieve because of being closer to the areas and the government in charge.”*

## **4 Discussion**

The insights from the USA and China reveal that engineers play a crucial role in their respective areas of work and are employed to work at the county levels, ensuring that every area within the jurisdiction of the local government develops as required. This, in turn, results in national development in different engineering sectors. As noted by the National Association of County Engineers (2021) and Jun (2017), county engineers in the USA and China help in providing advanced engineering solutions at their respective counties and assist in the management of various organizations by being at the forefront in giving ideas and information that are needed to improve services to the public. The county engineers in the two model countries significantly influence federal legislation on matters that affect county transportation, manufacturing, power consumption, and other public works departments. Moreover, the country engineers in the USA and China also foster and stimulate their organizations' growth by ensuring that they have the latest technologies that make them perform effectively and efficiently to meet their objectives and role to the public. The engineers in Kenya also contribute as much as their counterparts in the USA and China.

The present research has revealed that county engineers play a crucial role in devolution and county development. County engineers are responsible for the development of county projects, which were initially under the central government. This makes it easier for the officers to assess, plan, and allocate funds to develop projects based on their respective counties' needs and goals. In the process, they contribute in creating a sustainable economic niche that adds value to their communities. The current study has revealed that it is more straightforward for county engineers to decide on the projects that result in the development of the counties. These findings from the Kenyan county engineers reveal that Kenya is in the right direction of development as it is seen in developed countries that have impressed and implemented devolution.

## **5 Conclusions**

The current research has revealed that the USA and China county engineers are responsible for the engineering-related developments. The present study has also revealed that Kenyan county engineers' responsibilities are a manifestation of the fruits of devolution, which has made it easier to allocate resources to the people in remote areas. Moreover, the current research confirms that engineers at the county level play a significant role in developing their counties. Consequently, these findings reveal that if more engineers are employed at the county levels, it can result in tremendous growth in their regions and hence directly and indirectly contribute to accelerating sustainable economic recovery and growth at county levels and national level. Based on the findings from the literature review and the interviews, the current study recommends that Kenya counties should increase positions for county engineers to increase knowledge pool and enhance county performance. It is also recommended that county engineers should be employed as per their specific skill areas.

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