Exploring the Challenges Involved in Implementing Successful and Sustainable Infrastructure Projects in First Nations Communities within BC

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Why this Topic?

Implementing infrastructure projects in First Nations communities often involve many complexities that many not directly involved in these projects may not be aware of. This poster aims to educate the general public on the challenges that exist, and potential ways to negate them in the future to improve present and future infrastructure projects on reserve.

These challenges are discussed with a focus on their relation to water and wastewater projects as this has been the focus of my work, however the principles discussed are applicable to many different infrastructure projects.

Four Main Problem Areas

These infrastructure issues are very complex and do vary on a case by case basis, however there are certain reoccurring themes; those that I have noticed are highlighted and consist of: geographical limitations, logistical limitations, capacity issues and communication issues. Although these issues are discussed separately, they are all interconnected and all deal with the issue of economic feasibility.

Social Issues

Operators on reserve can face issues within their community as well. These issues are more complex than those relating to training and can relate to: lack of support from community administration; little awareness of the importance of water treatment by the community; and a poor understanding of the operator's role in maintaining community health and safety⁽³⁾.

Logistical Limitations

Topic Importance

Many First Nations communities within British Columbia have infrastructure issues even after decades of federal assistance in these projects. Education on current living situations, project complexities and procedures are important in eradicating differences in living conditions on and off of reserve, and in bolstering support for more projects on reserve.

Current Situation

In 2011 the National Assessment, mandated by the federal government, surveyed the water and wastewater systems of 188 First Nations in British Columbia. It determined that 72% of all homes have piped water, and 54% of all homes have piping for wastewater. Those without water and wastewater piping use truck delivery, septic tanks or have no service. Approximately 1.5% and 2% have no water or wastewater service, respectively. The National Assessment also identified that several water and wastewater systems are high risk, as shown in Figures 1 and 2 below⁽¹⁾. **Figure 1: BC Water System Risk Ratings** Figure 2: BC Wastewater System Risk Ratings High Risk Medium Risk

Low Risk

76

69

84

52

154

Geographical Limitations

Figure 3 below shows the distances of the bands surveyed to their closest service centre, which is defined as the closest town to a band that is able to provide contracting or other major project services.

Figure 3: Distance from Bands to Service Centres



As shown above, many bands are more than 50km away from their closest service centre. These large distances can have many negative effects on local infrastructure; they can increase the cost of materials and labour substantially, as well as make it more difficult to obtain any necessary replacement parts⁽²⁾. There are also instances where the only way to reach the reserve is by using unpaved roads, or roads that are that otherwise difficult to traverse, which make transportation of building materials more difficult. In other situations the community may not be accessible year round, which can increase project costs. These high costs reduce the number of project that can be completed each year under the government's set budget. Many First Nations communities in BC have very small populations, most of which are in the hundreds. Figure 4 below shows the number of sewer connections, which can be approximated to the number of houses, in the surveyed bands.



Many of the surveyed bands have less than 100 service connections, meaning that many bands have less than 100 homes. These small communities can struggle with infrastructure projects, such as water and wastewater systems, for a variety of reasons, including: limited funds and access to resources; failing existing infrastructure; changing source water conditions; and high operator turn-over ⁽³⁾.

Data Source

The majority of the data used for this poster was collected while conducting a survey on wastewater systems on reserve for Aboriginal Affairs and Northern Development Canada (AANDC). This information consists of statistical data as well as first hand opinions and observations.

Capacity Issues

Many First Nations water & wastewater systems operators are not trained to the level required to properly operate their systems. This lack of training is identified as one of the root causes of the lack of provision of safe water in Canada⁽³⁾. The federal government does help fund the training of operators through the Circuit Rider Training Program and certification programs. Some programs may require travel and are several days long, which can be challenging for operators.

Once an operator is trained it can be difficult to keep them on recorve when there are many industry jobs relatively close by

Although these systems are funded by the federal government, because British Columbia, unlike other provinces, has such a large number of bands with smaller populations it is difficult to provide each band with the adequate funding and support to implement and sustain all required infrastructure projects.

Conclusion

Financial limitations are an underlying problem of many of the issues with developing infrastructure projects on reserve as the required solutions would require a larger government budget than is currently allotted.

To improve these infrastructure deficiencies there would need to be a bigger budge to: increase the amount of projects that can be funded per term; fund the certification and training of more operators; increase operator wages to make the position more attractive; and increase community education and awareness programs on the importance of operators and water treatment in community health.

References

(1) Aboriginal Affairs and Northern Development Canada. (2011, July). *Fact Sheet - The Results of the National Assessment of First Nations Water and Wastewater Systems for British Columbia*. Retrieved December 2014, from Aboriginal Affairs and

Any other data sources used are included in the



reserve when there are many industry jobs relatively close by that require the same training yet provide better wages⁽³⁾.

