

Reaching Sustainable Development Goal 9 in Developing Nations

Improving industry, innovation and infrastructure is the underlying aim of *Sustainable Development Goal 9* (SDG 9). With the rapid expansion and application of new, more efficient technologies, every aspect of our world is changing. This new age of change is making the disparity between developing and developed nations even more apparent. SDG 9 is concerned with the termination of this disparity and fears that if action is not taken soon, developed nations will become far more advanced. Leapfrogging is a feasible method for preventing this disparity from becoming larger. The method details the immediate implementation of new infrastructure within developing nations (Pilling, 2018). It has coined the name leapfrogging because it jumps stages in the gradual improvement of infrastructure. This procedure has varying levels of success. However, provided with a somewhat healthy socio-economic and political environment, more often than not, leapfrogging will be successful. Examining the factors affecting leapfrogging such as, finance, foreign investors and corruption, will help to determine its effectiveness.

The necessity for new infrastructure arises from the lack of information and communication technologies (ICTs) within developing countries. Only around 6% of people in all developing countries have access to somewhat high speed broadband (MPFD Policy Briefs, 2019). This is becoming a great concern, considering the growing uses of ICTs. Machine learning and cloud computing are two of the many examples, without the correct ICT infrastructure in place, developing nations can not contribute to or benefit from this new electronic world. Thus widening the gap even further between developing and developed nations in many aspects. Additionally, the lack of telecommunications and ICT infrastructure

results in people effectively being invisible in this electronic world (Davison, Vogel, Harris and Jones, 2020). To further stress the importance of ICT and telecommunication infrastructure, the MPFD Policy Briefs (2019) provide a detailed list of all the ways in which improving infrastructure for SDG 9 positively impacts many other areas thus helping to reach other SDGs. Some of the examples include providing more jobs, increasing access to education, improving resource efficiency through the use of smart grids, among many other benefits. Implementing new ICT infrastructure within developing nations should theoretically have many extra benefits. So leapfrogging is a viable method to utilize. This implementation, as explained in the MPFD Policy Briefs (2019), would have numerous knock on effects which could improve industry and would more likely than not, allow for more innovation to take place within these developing countries. However, it is not as simple as implementing new infrastructure, these projects need copious amounts of funding. Financing projects is one of many difficult tasks to do successfully in developing nations.

Although the economic benefits from leapfrogging new infrastructure are plentiful, without appropriate financing realizing this goal will be difficult. Especially when it comes to many developing countries, specifically areas in Africa, South America and Central America. These regions are host to the 10 countries that invest the least annual amount into research and development (R&D) (Iberdrola,2020). Applying the best effort towards reaching SDG 9 by 2030, Sobják (2018) indicates that Africa's \$80 billion spent on R&D in 2015 would need to be doubled. Without the aid from private businesses and corporations achieving this task is virtually impossible. However, the high rate of corruption in many developing nations makes companies hesitant to provide these finances (Sobják, 2018). The unpredictable economic and political situations within developing nations makes it difficult to achieve a number of tasks and leapfrogging is no exception to this. Investors are particularly hesitant to aid in this

endeavour due to the fact that half of all the bribes made are done within industries that spend the most on infrastructure (Sobják, 2018). As a result of this hesitance, only 10% of planned projects in Africa reach the financial transaction phase (Lakmeeharan, Manji, Nyairo, and Poeltner, 2020). Altogether, private corporations and investors are hesitant to provide funding for a select group of developing nations due to the uncertainty of where the financing will end up. Of course this does not apply to all developing nations, some of which will find little difficulty attracting foreign investors. However, as stressed by the UN, if any of the SDGs are to be met by 2030, it requires a global effort. This means that it is up to investors and these developing nations to work together in order to organise a way to help each other.

Attracting private companies and investors to aid with the investment of new infrastructure is likely the easiest path towards finding the finance for SDG 9. However, this leaves it up to each individual nation whether they follow the steps towards making themselves more attractive to investors. Lakmeeharan et al. (2020) provide a solution to this ‘infrastructure paradox’. The solution details 5 areas of improvement that are essential towards attracting investors. These factors range from improving: risk return ratios, regulatory risks, political and economical risks, among others. Although the suggested course of action is well researched, it lacks detail when it comes to improving the political and economic situations in extremely impoverished nations. In these extreme cases a more fool proof method is needed that details every small step required for improvement. Lakmeeharan et al. (2020) do suggest initially implementing a simple project such as a solar power plant which investors have an appetite for. Following this, possibly reallocating government funding could open up private sector financing. These two actions could have significant improvement in working towards a nation that is worth investing infrastructure in. However, as mentioned by Sobják (2018), corrupt governments would need substantial incentives to

relocate their funds. This lowers the potential profit of interested investors which, again, lowers investment opportunities. To solve this issue, along with the method detailed by Lakmeharan et al. (2020), neighbouring countries and investors need to detail all the possible benefits governments receive from allowing investors to finance projects whilst keeping a majority of the profit.

The infrastructure gap between developed and developing nations has been growing for the past few decades . This gap can be instantaneously closed through the completion of SDG 9. Leapfrogging, the popular method proposed by many, will leave developing nations many steps ahead of their current infrastructural level. Even though leapfrogging comes with many benefits it is difficult to implement in some developing nations. As detailed by Sobják (2018) and Lakmeharan et al. (2020), corrupt governments have lowered their countries' attractiveness to investors. If this is not changed SDG 9 will likely not be met by every country. A possible way to ensure all developing nations complete SDG 9 is for investors and interested countries to detail the future incentives for these specific governments. Successfully persuading developing nations should allow for leapfrogging to be an effective means of improving infrastructure, innovation and industry. However, as with the rest of the SDGs, a global effort is needed to successfully reach SDG 9.

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