

## PANEL DISCUSSION: “Improving safety and preventing accidents in African railways”

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While the recent spate of railway accidents in Southern Africa has drawn much press attention, little outrage has been directed at the steadily increasing carnage on the region’s roads. This is nonetheless no excuse for the fundamental lack of operating discipline behind most of the accidents involved.

Railways in Africa must be prepared to operate under African conditions—namely, the failure of signal systems, the difficulty of maintaining high-tech equipment in a low-tech environment, etc. Signaling is vulnerable to both vandalism and adverse climate conditions, to the extent that it creates a safety risk on its own. Other considerations include that signals are often sabotaged by train robbers in order to stop trains where it suits these pirates the best.

It is therefore not surprising that one aspect of North American railroading, namely the operation of branch and secondary lines without signals, has taken root throughout Africa. For example, Malawi and Northern Mozambique are operated using variations of this practice, as is approximately 30% of Spoornet’s route kilometers. But while this has produced economic efficiency in operations, the more important consideration of safety requires that operating discipline accompany the new technical realities. For this reason, human considerations such as training and monitoring are both of the highest importance and relatively inexpensive. The single most effective tool for improving railway safety is therefore the development of realistic norms reflective of our operating environment, and the training and discipline necessary to implement them. In this respect, safety is more of an institutional challenge than a technical challenge.

Experience in a variety of operating conditions and cultures suggests that a combination of measurement and incentives is the appropriate way to manage operations. Simple measurements such as accidents per train kilometer and injuries per employee allow both the measurement of improvement over time and benchmarking against other railways in similar environments. Incentives must usually go beyond the basic need to protect life and property—different cultures

demand different solutions but there is one common thread, and that is that the owners must be personally interested in safety and make it a company priority.

While the above institutional solutions are likely to be the most effective, technical challenges also exist. Apart from the basics of safe track and rolling stock, the biggest opportunity for improvement in rail safety is also the least expensive, namely continuous communication and train tracking. To face this challenge Africa can make a quantum leap away from land based signaling and infrastructure by piggybacking onto rapidly evolving technology such as satellite communication and cellular phone networks that can provide uninterrupted communication without the associated high maintenance cost and risks of damage or vandalism to land based infrastructure. An additional benefit is that with GPS tracking and continuous communication the train control center can act as an additional set of eyes to the train crew reminding them of approach to the end of track warrant and the position of opposing trains; such systems also make it easy to monitor section speed from the control center. This should be a natural evolution, supported by economics; despite the current high cost of such communications systems, over time the cost will continuously drop.

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