

## INFRASTRUCTURE IN THE 21<sup>ST</sup> CENTURY

### CONCURRENT SESSION 3

**Optimizing future road infrastructure for societal benefit and environmental protection in Papua New Guinea presented by Dr Mason Campbell, Field Director and Postdoctoral Research Fellow, Centre for Tropical Environmental and Sustainability Science, College of Science and Engineering, James Cook University. Co-presented by Dr Mohammed Alamgir, Postdoctoral Fellow, Centre for Tropical Environmental and Sustainability Science, College of Science and Engineering, James Cook University**

We are currently living in the most explosive era of infrastructure expansion in human history. By 2050, it is projected that there will be an additional 25 million kilometers of paved roads on Earth—enough to encircle the planet more than 600 times. Around nine-tenths of these roads will be built in developing nations and tropical regions, which sustain many of the planet's most biologically diverse and environmentally important

ecosystems. Unfortunately, the contemporary avalanche of new infrastructure is having severe impacts on many ecosystems and species. However, not all infrastructure is 'bad' for the environment. In appropriate contexts, new infrastructure can yield sizeable social and economic benefits with only limited environmental costs. For instance, road improvements in already-settled areas can facilitate increases in agricultural production and improve rural livelihoods, by giving farmers better access to urban markets, fertilizers, and new agricultural technologies. Our team at James Cook University, Cairns are working in conjunction with researchers from the University of Papua New Guinea, the Papua New Guinean government and non-government organizations to devise and implement spatial land-use planning tools that will minimize the environmental costs and maximize the socioeconomic benefits of road expansion.

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