EXECUTIVE SUMMARY

Forests have an important influence on the world's climate processes – both through their role in the cycling of greenhouse gases and through the exchange of water and energy with the atmosphere.

Tropical forests are particularly important as a carbon store, because of their high biomass, containing on average 50% more carbon than temperate forests. The Congo Basin's forests are estimated to contain between 25-30 billion tonnes of carbon in their vegetation – this is equivalent to about 4 years of current global anthropogenic emissions of CO2. Over half of this carbon is stored within the forests of the Democratic Republic of Congo.

Conversion of tropical forests can result in nearly all the above ground carbon being released to the atmosphere, while forest degradation may result in 25-50% of stored carbon being released to the atmosphere. Selective logging prevails as the main 'forest management' strategy in Central Africa, and for this reason, forest degradation may be a more important source of carbon emissions than deforestation – one estimate suggests that forest degradation accounts for nearly double the emissions resulting from deforestation within the region.

Emissions from land-use change in the tropics could be as high as 2.5 billion tonnes of carbon per year. A frequently cited figure is that this is equivalent to about one fifth of total global emissions, although the variation in estimates means that this could in fact be anywhere between one tenth and one third of the total. Land-use change in the Congo Basin is estimated to account for emissions of between 20 and 440 million tonnes of carbon per year – equivalent to 90% of all anthropogenic emissions from the region. Although this represents a relatively small proportion of the total emissions from tropical land-use change worldwide, its contribution is likely to increase if the wrong policy options are pursued.

In the case of the Democratic Republic of Congo, if the entire area of 60 million hectares which has been suggested as being 'production forest' were actually opened up to new industrial logging activities, it would potentially release an additional 3 to 6 Gt of carbon into the atmosphere. A further similar amount could be released if these logged forests are eventually completely cleared – the usual pattern following forest degradation and fragmentation.

The Congo Basin's forests also play a crucial role in climate processes through the exchange of water and energy with the atmosphere. There is strong evidence to show that deforestation affects local climate, causing a decline in rainfall and increase in temperatures. The region's forests are also a major driving force of large-scale atmospheric circulations, and so land-use changes within the Congo Basin influence both regional and global weather patterns. Thus, deforestation within Central Africa could result in large-scale climate effects, changing temperatures, the distribution of rainfall and climate variability in distant parts of the world.

Such evidence raises the stakes in terms of the need to protect the forests of the Congo Basin. The use of carbon financing has great potential as a means to fund such efforts, although the development of an effective and equitable system will require further investigation and negotiations. Any such mechanisms depend on the establishment of good forest governance and the resolution of land tenure and resource rights, and so these issues must be the priority in the immediate-term.