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Mobile apps for 30×30 equity

In December 2022, 188 governments of the world committed to effectively and equitably conserving 30% of the Earth's land and sea by 2030 by adopting the Kunming-Montreal Global Biodiversity Framework[1]. Conservationist groups have lauded the ambitious framework, which is widely referred to as 30×30. However, major concerns exist regarding how governments will implement the agreement and how targets will be monitored and verified[2]. Indigenous peoples and local communities (IPLCs), as well as agricultural groups, have voiced concerns that 30×30 will lead to inequity and associated losses of food security and economic opportunities[3,4]. With 40% of all protected lands inhabited by IPLCs (38 million km^2 worldwide), typically having access to limited economic opportunities compared with wealthier regions of the world, the equitable and inclusive achievement of 30×30 is challenging[4]. Solutions are urgently needed to achieve 30×30 while respecting the rights of IPLCs[2].

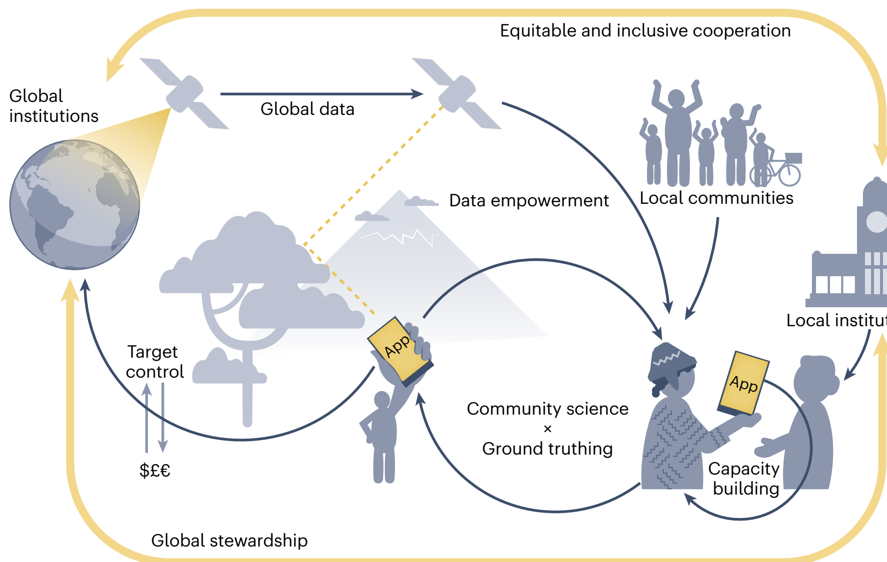

Fig. 1 | Proposed integrated system where local NGOs provide community scientists with support, training and knowledge transfer to promote inclusivity and data verification. Mobile applications are used to channel funds to individuals for ground truthing remote-sensing data, which are subsequently used to monitor 30×30 targets. Figure adapted with permission from Jonathan Mazzoco.

Building on emerging and existing technologies, opportunities now exist to combine remote-sensing products with ground truthing to monitor 30×30 targets. Public and private programmes such as NASA and Planet Labs are investing in satellites to collect data on ecosystem health and biodiversity at a global scale[5]. These products are combined and integrated into key metrics such as Essential Biodiversity Variables[6], which are used to monitor and forecast global ecological health for 30×30 assessments. However, remote-sensing products require additional ground validation for data quality assurance, which requires on-ground data collection[5]. There is an untapped opportunity to engage and incentivize IPLCs globally in conservation actions through financial compensation for on-ground data collection. Therefore, we suggest the development of systems that deliver direct payments to IPLCs for ground validation of remote-sensing data via mobile applications to strengthen verification, equity and inclusivity of 30×30.

IPLCs living in and near conservation areas face the direct costs of environmental conservation[7]. Regulations designed to protect ecosystems typically restrict traditional livelihoods and opportunities for development, while increasing human–wildlife conflict. To enhance the inclusion and equity goals of 30×30[1], we propose the development of mobile applications for channelling funds to individuals participating in remote-sensing ground validation near or in protected and conserved areas (Fig. 1). Such mobile applications would encourage the involvement of IPLCs in data production and ecosystem monitoring, simultaneously benefiting environmental conservation goals and alleviating poverty[8].

Mobile applications providing secure payment for user input would allow conservation funds to reach IPLCs directly and support equity by economically empowering local communities — a goal highlighted in the Convention on Biological Diversity (CBD) targets 3, 9 and 19. Following good practices and methodologies, they should build upon previous community science programmes[9] and applications, such as eBird, iNaturalist and NASA GLOBE Observer. A range of potential sources of funding for direct payment can be established, including commitments from multi-lateral donors, private industry and international funds such as the Global Biodiversity Framework Fund[1].

Connecting community science to remote sensing for the inclusive and equitable implementation of 30×30 holds much promise and would address the CBD's goals B and D, and targets 1, 3, 9, 19, 20 and 21 (Supplementary Table 1). However, it faces several challenges. First, there are numerous mobile applications with similar goals, which creates confusion and a challenge for coordination on a global scale. Second, local organizations require institutional support to enable individuals to collect data and coordinate with the international community. Government buy-in and support, and institutional systems that align with the principles of good governance, are required to address corruption and for the equitable flow of money from global conservation funders and organizations to IPLCs[10]. Verification systems for data collection are necessary to ensure data validity and quality. Security of users (physical and digital) and transfers of data and money are critical and need to integrate the best practices and standards, drawing on established technologies for successful implementation. Connecting community science to remote sensing holds great promise for the global south; therefore, leadership and high-level support for implementation from governments of the global south will be essential. Finally, pilot studies will be required for the development of mobile applications, verification systems and integration with remotely sensed data to inform larger-scale implementation.

Governments are currently operationalizing the implementation of 30×30 in their jurisdictions. We urge governments and other implementing agencies, funders and relevant CBD technical expert groups to integrate community science and remote-sensing technologies for monitoring 30×30 conservation actions. Strengthening equity, inclusion and verification is essential for the effective and sustainable achievement of 30×30 that aligns with the Sustainable Development Goals and fosters global cooperation.

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Author contributions

J.M.K. and C.G. co-wrote the manuscript. C.G. prepared the figure. J.M.K., C.G. and D.B. led the research. J.L.D. and P.R. conceptualized the manuscript idea and assisted in the editing process.

Competing interests

The authors declare no competing interests.

Additional information

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