Integrated Transactional Environment Management Systems

UKCEH was a pioneer of integrating environmental knowledge, in NERC's Environmental Information System for Planners (EISP), which started in the 1990s[1]. It then helped design a Transactional Environmental Support System (TESS) during 2008-11, with which local managers of land and species ('practitioners') could be engaged to provide local knowledge in exchange for decision support to benefit livelihoods[2]. Both EISP and TESS were ahead of their time, but taught partners the importance of convening practitioners to build data-coverage as baseline for conservation actions. IUCN then created a European website in 23 languages to promote this approach, while GWCT started a process of forming farmers into clusters and catchment groups for landscape-scale actions to scale up practitioner conservation nationally[3].

UKCEH and GWCT are both cooperating with UK commercial interests, and UKCEH has won funding to develop software for farmland. However, IUCN sees a need to help meet global Sustainable Development Goals (SDG) by rapid scale-up of science-based prediction combined with Indigenous and Local Knowledge (ILK), as does IPBES[4]. IUCN and partners are bringing together young and old, as scientist and practitioner volunteers, driving forward a process that needs to remain strong in the civic sector to ensure open operation and data unhindered by commercial/political constraints. Moreover, to promote socially acceptable environmental transitions everywhere, and encourage constituencies to support politicians who favour rapid change, there is a need for a global-with-local approach in as many languages as possible. This is why IUCN has been helping practitioners with global reach to develop multilingual networks. We now seek to promulgate multilingual web-services for environmental transitions.

In the development of Integrated Transactional Environment Management Systems, there are four distinct areas where language is important:
1. The interface for policy-makers;
2. The interface for land managers at local level;
3. The 'engine' of code for calculations (including its notation);
4. The databases of localised information.

It seems reasonable to assume, for the short to medium term at least, that a lingua franca such as English can be used for engine and databases, in the latter case given translation of incoming data (e.g., of species' names, perhaps to Latin). It also seems wise in the short term to use English for policy-makers. However, only about 20% of the world's population use English as a first or second language, and the proportion may be lower in rural areas where education is often minimal. Therefore, it is essential that the interface for local level is multilingual, to concur with multilingual signposting on networks such as Naturalliance[5].

IUCN's group 'Sustainable Use & Management of Ecosystems', working with IAF and ESUG[6], has therefore [proposed partnership with UKCEH and GWCT](#) to find funding for multilingual development of interfacing for land managers, and for aspects of engine and databasing that need integration. The system should aim for free transaction of knowledge as widely as possible but provide for knowledge-rights and data/computation-charges where necessary. It should enable partner-required business models while enhancing scope and rewards for researchers, not least through recognition as a standard-setting international civic system.

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[1] Culshaw et al 2006. Science of the Total Environment 360:233 and https://nora.nerc.ac.uk/id/eprint/508099/1/CR08130N.pdf

[2] Kenward et al 2013. Transactional Environmental Support System Design: Global Solutions. IGI-Global, USA.

[3] Dent 2018. Making the most of private stewardship for conservation - a voluntary landscape approach. pp. 111-8, Advances in Conservation Through Sustainable Use of Wildlife. Univ Queensland, Australia and https://www.farmerclusters.com.

[4] IPBES Thematic Assessment on Sustainable Use of Wild Species.

[5] https://www.naturalliance.org, see also https://www.perdixnet.org and https://www.sakernet.org.

[6] International Association for Falconry & Conservation of Birds of Prey and European Sustainable Use Group.