Request for proposals for a scoping study to identify options for modelling of the potential global socio-economic impacts of future changes in biodiversity and ecosystem services

Introduction

WWF-UK wishes to appoint a consultant or consortium to undertake a scoping study to identify options for modelling the potential global socio-economic impacts of future changes in biodiversity and ecosystem services. The Terms of Reference (ToR) for the study are set out below.

Proposals should be submitted by email to Toby Roxburgh, Economics Adviser, WWF-UK (troxburgh@wwf.org.uk) by no later than 5pm on Fri 24th Feb 2017.

For all enquiries, please contact Toby by email or phone (+0044 (0)1483 412234).

Terms of reference

Summary

This scoping study is a key part of Phase 1 of a new project initiated by WWF, the overall aim of which is to help strengthen the evidence base on the potential global socio-economic impacts of future changes in biodiversity and ecosystem services. The ambition is that, in doing so, the project will help to justify and secure stronger policy commitment and investment towards the protection, improvement and sustainable use of the world's critical natural systems, particularly in the run-up to the forthcoming international policy discussions in 2020.

This scoping study (which will run until June 2017) seeks to identify the current state-of-play in international environment-economy modelling/research, and to identify what new modelling and/or analyses should be prioritised to fill key evidence gaps. It will also identify recommendations to help inform the development of a strategy for taking forward such work in Phase 2 (which would run from July 2017 to June 2018, or longer if required).

Context and justification

The world's economies and human well-being are all fundamentally dependent on healthy and functioning natural systems. Yet mounting evidence shows that current patterns of development and resource use are degrading the environment at such a rate globally, that nature's ability to continue to provide us with these benefits is increasingly at risk. The picture is increasingly clear: unless we reverse these declines, the future implications for humankind will potentially be profound.

Progress against international commitments to help tackle these issues will be under intense scrutiny in 2020 (particularly related to the Convention on Biological Diversity, Sustainable Development Goals and UN Framework Convention on Climate Change).

To support these 2020 policy discussions, the international research community is accelerating efforts to better understand and communicate the current state of the world's natural systems, as well as possible future trends/scenarios (particularly via IPBES, which comprises more than 1000 experts in more than 100 countries, as well as UNEP, TEEB, CBD, WWF and other organizations).

To maximise the impact of these efforts, there is also need to show how potential and/or predicted future environmental trends/changes (and the potential policy measures that may be required to address them) connect with the largely economic interests of governments and business decision-makers that can affect change. To do this, there is urgent need to better understand and communicate the importance of the Earth's natural systems to economic prosperity and human well-

being, the potential benefits of maintaining and restoring them, and potential consequences of business as usual.

There is a suite of on-going work to try to make models fit for purpose for the needs of the first IPBES global assessment, and to compare outputs among models. These are understood to be primarily efforts of the biodiversity/environmental modelling community, which is using socio-economic information/scenarios[1] as the basis on which to model impacts on biodiversity and ecosystem services, as well as exploring potential consequences of environmental change on key sectors (e.g. agriculture).

However, it is also understood that, to date, none of these existing initiatives has directly examined how future large-scale environmental change scenarios (whether related to biodiversity, ecosystem services or other variables) could affect economic metrics (e.g. GDP, productivity, growth or employment) and social impacts (e.g. health, employment, demographic change) at the global scale. Additional work therefore appears to be needed to complement existing efforts.

WWF has initiated a new project to help tackle this issue, the overall aim of which is to help strengthen the evidence base on the potential global socio-economic impacts of future changes in biodiversity and ecosystem services.

The ambition is to generate new evidence that can be widely shared with policy and business audiences in the run up to the 2020 discussions (including through the work programme of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) and the policy advocacy activities of WWF), to help justify and secure stronger policy commitment and investment towards the protection, improvement and sustainable use of the world's critical natural systems.

This scoping study is a key part of Phase 1 of the project (which will run until June 2017), and seeks to identify the current state-of-play in international environment-economy modelling/research, and to identify what new modelling and/or analyses should be prioritised to fill key gaps. It will also identify recommendations to help inform the development of a strategy for taking forward such work in Phase 2 (which would run from July 2017 to June 2018, or longer if required).

Study objectives

This scoping study has the following objectives:

1. To identify the anticipated 'needs' of the current IPBES work programme and WWF's 2020 policy advocacy activities, in terms of what information on the potential global socio-economic impacts of future changes in biodiversity and ecosystem services would help them to achieve their goals/objectives;
2. To identify the extent to which existing datasets, models and modelling initiatives could be utilised to meet the needs of IPBES/WWF (as identified under Objective 1) and identify key 'gaps'.
3. To develop a set of recommendations on further modelling/analysis that could be undertaken in Phase 2, in order to help address these gaps (as identified under Objective 2);
4. To organise, attend and help to facilitate an expert workshop to discuss the findings of work under Objectives 1 to 3 (particularly recommendations for Phase 2);
5. To provide a final publishable report setting out the overall study results and recommendations for Phase 2, taking into account feedback from the expert workshop.

[1] In particular, the Shared Socioeconomic Pathways (SSP) scenarios of the Intergovernmental Panel on Climate Change (IPCC) are central to current efforts to model impacts on biodiversity/ecosystem services.

Approach to the scoping study

The consultant/consortium should set out a proposed approach and methodology, and demonstrate how this will meet the above objectives. This ToR is not prescriptive about how the study should be undertaken, and accepts that a wide variety of different approaches might be proposed.

The tight timeframe will be a key constraint, as this scoping study must be completed by June 2017 (to provide the basis on which to plan/initiate Phase 2, if this is taken forward). Establishing early and effective dialogue with IPBES and other organisations will also be critical (especially to facilitate data/information exchange, and ensure recommendations for any future work in Phase 2 are consistent/aligned with IPBES).

Specific requirements per objective are as follows:

Objective 1: to identify the evidence 'needs' of the current IPBES work programme and WWF's 2020 policy advocacy activities, in terms of what information on the potential global socio-economic impacts of future changes in biodiversity and ecosystem services would help them to achieve their goals/objectives

The exercise will require obtaining, reviewing and synthesising relevant plans, strategies and reports, as well through discussion with stakeholders. A pro-active and creative approach is likely to be needed, because the 'needs' of IPBES/WWF may not necessarily be explicit in the available information, or clear to stakeholders at this stage. For example, it may be necessary to infer what IPBES/WWF's needs are based on relevant aims/objectives, work plans, reporting schedules and anticipated outputs/deliverables.

A critical issue will be the mechanisms, processes and approaches by which any new socio-economic information can be introduced into the current IPBES programme and WWF's 2020 policy advocacy activities. This should include consideration of, for example, when inputs will be needed (i.e. critical deadlines), what format inputs need to be in, how to make inputs, who to contact, etc.

Key needs associated with the current IPBES work programme (2017 to 2019) could include providing new data/evidence to support the global assessment report (inputs for which will be needed by June 2018 at the latest), as well as the wider research/reporting schedules of the global assessment group, scenarios & modelling group, and thematic/regional assessment groups. Needs may also relate to the development of IPBES' post-2020 work programme/strategy.

Key needs associated with WWF's 2020 policy advocacy activities could include providing new data/evidence to support forthcoming publication of the 2018 Living Planet Report (inputs for which will also be needed by June 2018) and 2020 LPR, its collaboration with Silverback/Netflix on the forthcoming 'Our Planet' TV series (due for release in 2019) and related 'halo' project (including Our Planet documentary and game), as well as other policy advocacy activities in the run up to 2020.

The consultant/consortium should also consider the broader objectives and priorities of the key organisations/actors that will be involved in the 2020 policy discussions (i.e. related to SDGs, CBD and UNFCCC), for example, for monitoring & evaluation of progress, target setting, policy development/evaluation or other purposes.

Key stakeholders are likely to include:

- Policy-focused experts, to advise on the needs of IPBES, as well as the needs of the broader post-2020 agenda (i.e. related to CBD, UNFCCC and SDGs). This could include, for example:, representatives from: IPBES Scenarios and Models Group / other working groups, UNEP-WCMC, UNEP, CBD, IPCC, UNFCCC, UNCCD, TEEB, IUCN, WWF and others, as well as key country representatives and representatives from larger foundations (e.g. Rockefeller, Kanne Rasmussen, MacArthur, Pew, others).
- WWF network / Our Planet staff, to advise on potential socio-economic data needs related to the 2018 Living Planet Report, Our Planet TV series/halo, and broader 2020 policy advocacy activities. WWF can provide names/contact details for key individuals.

- Representatives from the modelling/research organisations currently engaging with/supporting IPBES, for example: PBL, UNEP-WCMC, IIASA, CSIRO (Australia), University of Vienna, Karlsruhe Institute of Technology, University College London, University of Sussex, Natural History Museum, BirdLife International, Exeter University, Stockholm Environment Centre-York, London School of Economics, OECD, World Resources Institute etc.

Some stakeholders will need to be engaged bi-laterally (e.g. via emails, phone interviews and/or meetings). However, the potential to engage stakeholders via organisation of joint meetings/workshops should also be explored, as should the potential to engage stakeholders at and/or around existing meetings/events (e.g. the IPBES-5 Plenary being held in Bonn, Germany between 07/03/2017-10/03/2017).

Objective 2: to identify to what extent existing datasets, models and modelling initiatives could be utilised to meet the needs of IPBES and WWF (as identified under Objective 1), and identify key 'gaps'

To meet this objective, the consultant/consortium should identify the extent to which existing datasets, models and modelling initiatives could be utilised to meet the needs of IPBES and WWF (as identified under Objective 1), and identify key 'gaps'.

Note that the purpose of the exercise is *not* to collate or analyse data/information on the potential socio-economic impacts of changes in biodiversity and ecosystem services, nor to undertake any modelling/analysis (as this will be undertaken in Phase 2 of the project).

Rather, the exercise will involve a *rapid* review of datasets, models and modelling initiatives in order to develop a *broad overview* of:

- The existing availability of suitable datasets/information on the potential global socio-economic impacts of future biodiversity and ecosystem service changes;
- To what extent existing models/initiatives are already assessing (and are capable of assessing) potential socio-economic impacts at the global/large scale;
- What potentially suitable information on the potential global socio-economic impacts existing modelling/research initiatives will generate by 2019 (based on current plans/resources).
- Whether existing models could be used to generate useful new information through further work/research (e.g. by enhancing/adapting models, or by linking to other models);
- Whether the data/information exists to support such further work/research (e.g. whether IPBES' biodiversity/ecosystem service change scenarios/projections already exist and can be used for modelling socio-economic impacts, or if this itself is a gap).

Wherever possible, the consultant/consortium should make use of and refer to existing reviews (e.g. IPBES' methodological assessment report on scenarios and models of biodiversity and ecosystem services; UNEP's review of models for green economy policy-making; WWF's commissioned review of future resource trends modelling initiatives, by the Institute of Development Studies).

The review should aim to cover the major/leading existing models and initiatives, including the environmental/biophysical models being utilised in IPBES, including Madingly (UNEP-WCMC), Global Dissimilarity model (CSIRO), PREDICTS (Natural History Museum London), GLOBIO (PBL), EcoOcean (UBC) and CluMondo (Free University Amsterdam).

It should also consider relevant economic/socio-economic and integrated/integrated assessment models (e.g. IIASA's GLOBIOM model and others), particularly where these already integrate environmental dimensions (or could in the future), as well as relevant data/information (e.g. from IPBES' draft report chapters, WWF's LPR species/biome health work, CBD Global Biodiversity Outlook reports, etc).

The exercise will also involve identifying and consulting with relevant stakeholders to identify/obtain information and discuss key issues/questions (e.g. this could include UNEP-WCMC, WWF, TEEB, University of Vienna, Karlsruhe Institute of Technology, Exeter University, Stockholm Environment Centre-York, London School of Economics, OECD, World Resources Institute, McKinsey Global Institute, Industrial Economics, International Institute for Applied Systems Analysis (IIASA), IASS-

Potsdam, Massachusetts Institute of Technology (MIT), International Futures, University College London, University of Sussex, Natural History Museum, BirdLife International etc).

It may be useful to develop a series of criteria (in discussion with WWF) against which to summarise the results of the review. For example, when reviewing models, relevant criteria could include:

- Purpose/scope of model (e.g. modelling changes in environmental/bio-physical metrics, and/or socio-economic impact of environmental changes);
- Type/nature of model (e.g. integrated or not, static or dynamic, spatially aggregated or disaggregated, linkages to other models, etc);
- Modelling approach/methodology (e.g. scenarios used, impact metrics etc);
- Environmental scope/focus (e.g. biodiversity, specific ecosystems, water, soil, etc);
- Geographic scope/scale;
- Development status (e.g. fully developed or proof of concept);
- Potential opportunities to extend, adapt and/or link to other models (and extent to which data/information is available to do this);
- Key organisations involved/key contacts etc.

The findings of the review and gap analysis should be summarised as clearly/concisely as possible, including through the use of matrices, fact-sheets and other methods, where useful. It should include a concise synthesis of the information collected/reviewed and a summary of the analysis of key gaps, together with an outline of the rationale/logic and other relevant conclusions.

Objective 3: to develop a set of recommendations on further modelling and/or analysis that could be taken forward in Phase 2, in order to help address key gaps (as identified under Objective 2)

To meet this objective, the consultant should develop a set of recommendations for further modelling and/or analysis that could be taken forward in Phase 2, in order to address key gaps identified under Objective 2.

At this stage, recommendations for Phase 2 are likely to be *preliminary*, as they will be refined based on discussions at the expert workshop (under Objective 4). However, they should be sufficiently detailed/developed to provide WWF/workshop attendees with a clear sense of the 'case' for further work in Phase 2, what the potential priorities should be, and potential ways forward.

Recommendations could relate to a range of potential/suggested research, modelling and/or analysis options, which themselves could be tackled in a range of different ways with different project partners/collaborators, and generate different outputs over different timescales.

Recommendations could consider aspects such as:

- How to structure the overall Phase 2 approach to meet IPBES/WWF needs;
- What kinds of work should be prioritised (e.g. research, modelling and/or analysis);
- Potential approaches/methodologies that could be employed (e.g. whether to extend, adapt and/or link existing models or to develop new models; how outputs of one model could be used as inputs for another; possible approach to biodiversity/ecosystem service scenarios; suitable economic/socio-economic metrics etc);
- Key trade-offs to consider (e.g. new models may provide enhanced integration, but will take longer/cost more and might lose detail etc);
- Key types of data/inputs would be required to develop modelling scenarios and run any new modelling/analysis of socio-economic impacts;
- Potential data sources, data-sharing arrangements/timing;
- Indicative time / budget requirements for further work/options (n.b. time is a major constraint, whereas fund-raising could be tailored to an extent to work that is required).
- Potential approaches to collaboration/partnering (and relevant organisations).

When developing recommendations for Phase 2, the following should also be considered:

- The timeframe for Phase 2 is likely to be tight. At this stage, it is assumed that and any new modelling/analysis would need to be completed by June 2018 (assuming outputs are to be used in WWF's LPR 2018 and IPBES' global assessment report). However, this assumption, and implications for timings, should be discussed with WWF/IPBES (under objective 1).
- At the same time, the ambition is for any Phase 2 work to be as innovative as possible within the timeframe, ideally advancing the field of environment-economy research (e.g. through the development of new models/modelling approaches, and/or adapting/linking existing models/datasets).
- A range of partnership, collaboration and funding approaches could be explored in Phase 2, depending on what is required.
- It may be useful/necessary to adopt an iterative approach to Phase 2, for example, by 'piloting' the approach/methodology before scaling up to a full modelling exercise.
- The primary focus in Phase 2 should be on modelling/analysis of socio-economic impacts of changes in biodiversity and ecosystem services at the global-level.
- However, it may also be useful/possible to combine this with a 'bottom-up' regional and/or national-level analysis (particularly in the context of WWF's priority places), drawing on evidence from WWF's regional programmes, IPBES regional assessments and other sources.
- Scenarios are likely to be central to the approach taken in Phase 2, in order to assess the potential socio-economic impacts of future changes in biodiversity and ecosystem services under a range of plausible scenarios – e.g. business as usual (to highlight the risks/costs of allowing current trends to continue) and, potentially, a range of 'sustainable' policy scenarios (to highlight opportunities/benefits of policy action to reverse them). Alignment with IPBES' biodiversity/ecosystem service scenarios (and IPCC's Shared Socio-economic Pathways (SSC) scenarios, which IPBES is using for its analysis) should be considered.
- It is assumed that Phase 2 will *not* involve modelling/analysis of potential future changes in biodiversity/ecosystem services (e.g. due to changes in natural capital or other drivers), as this is being explored by others (notably IPBES). Rather, it is assumed that Phase 2 would use the outputs of IPBES' biodiversity/ecosystem service models as a key input for modelling of the potential socio-economic impacts[2]. In this way, the project will complement and build on existing work. However, these important assumptions, and feasibility/arrangements for timely data exchange, need to be checked during this study (e.g. under objective 2).
- It is assumed that Phase 2 *will not* involve new modelling/analysis of the socio-economic impacts of climate change per se, as this important issue is being addressed by others. However, the role that climate change may play in influencing how biodiversity/ecosystem services affect socio-economic metrics may be an important consideration.
- Modelling/analysis may need to consider a range of different ways in which socio-economic impacts could occur under future biodiversity/ecosystem service scenarios, for example, due to changes in the provision of ecosystem services (e.g. changes in the availability and price of water/raw materials could affect key economic sectors and supply chains) or due to anticipated policy/regulatory responses (e.g. which may require sectors/businesses to change production processes to avoid and/or mitigate impacts).
- Recommendations on appropriate socio-economic impact indicators should consider what will resonate with key target audiences, particularly in the economic policy arena (e.g. WEF, G20, OECD, WTO, UN etc). It is assumed that a major focus will be on indicators of macro-economic performance (e.g. how changes in ecosystem services/biodiversity may affect GDP, value added, productivity, growth, jobs etc), as well as other socio-economic/social metrics (e.g. health, employment, demographic change, etc).

[2] These model outputs become will become available first half of 2017, according to the work plan of IPBES's scenarios and models deliverable.

Objective 4: to organise, attend and help to facilitate an expert workshop to discuss the findings of work under Objectives 1 to 3

To meet this objective, the consultant should convene, attend and help to facilitate an 'experts' discussion workshop (ideally in May 2017) to discuss and solicit feedback from stakeholders on the findings of the work to date (under objectives 1 to 3), particularly the recommendations for Phase 2. WWF can also support facilitation if/as needed.

Relevant invitees may involve, for example, staff from WWF, and from IPBES, CBD and other initiatives/processes. The location would ideally be in London, UK, though alternatives can be considered.

Objective 5: to provide a publishable report setting out the overall study results and recommendations, taking into account feedback from the expert workshop

To meet this objective, the consultant/consortium should produce a concise final report setting out the overall study results and recommendations, taking into account feedback/comments from stakeholders (via the expert discussion workshop) and WWF (via review of the draft final report).

The final report should include a fully worked up set of recommendations for Phase 2, taking into account the requirements/suggestions set out under Objective 3. The final set of recommendations should aim to support WWF in: development of a strategy/work plan for Phase 2, drafting of a Terms of Reference (ToR) for commissioning new modelling/analysis, setting funding targets, and securing project partners.

The report format/contents should be discussed and agreed with WWF during the course of the study, but is likely to be in the region of 60-80 pages, plus executive summary and appendices. Information should be presented as clearly/concisely as possible, including through the use of tables, matrices, fact-sheets and other methods, where useful.

The report should be as concise as possible, whilst providing sufficient detail to support planning of Phase 2. It should be written in non-technical language, so that it can be published externally (under the consultant's name) and shared with potential partners, funders and other stakeholders to help generate support for the project.

Study outputs

The consultant/consortium should produce the following outputs from the study:

- Interim report summarising the study results under Objectives 1 to 3 (including preliminary recommendations for Phase 2).
- Additional materials for the expert discussion workshop (as per Objective 4), e.g. meeting agenda and MS PowerPoint presentation slides.
- Final report setting out the overall study results and recommendations (as per Objective 5).

Timeline

A proposed timeline for the work (and key milestones) is as follows:

- Fri 24th February 2017 (5pm GMT): Due date for proposals.
- Fri 3rd March 2017: Finalisation / start of contract.
- Within 1st week of start of contract: Inception meeting / call (between consultant/ WWF)
- April / May 2017: Submit interim scoping report (including options/considerations for Phase 2), to be shared with attendees ahead of expert workshop.
- May 2017: organise, attend and support facilitation of expert workshop.
- Fri 23rd June 2017: Submit final report, taking into account feedback from the expert workshop and WWF/reviewers comments on the draft final report.

With the exception of the due date for proposals (24/2/17) and deadline for the final report (23/6/17), alternative proposals for the timing of activities/milestones will be considered.

Submission of proposals

Interested consultants are requested to submit a proposal by email to Toby Roxburgh (troxburgh@wwf.org.uk) no later than 5pm (GMT) on Fri 24th Feb 2017.

Proposals should include the following information:

- A proposal of work, setting out the proposed study approach, methodology, expected data/information sources, and timeline.
- A quotation, including:
  - total cost (gross *and* net of UK Value Added Tax, where applicable)
  - breakdown of cost per task/objective (with separate costs for team members and expenses)
  - daily cost rates for team members
- A summary of relevant project experience for the overall team
- A two-page CV for each team member
- Confirmation of availability for the expected project duration.

WWF encourages organisations/individuals to link up with others within a consortium, in order to provide and demonstrate the right combination of skills/experience. Consultants/consortia that can demonstrate the following will be prioritised:

- Experience in undertaking similar strategic scoping studies to inform project planning;
- Experience/knowledge of modelling/analysis of the socio-economic impacts of large-scale environmental change (particularly in the context of biodiversity and ecosystem services);
- Experience/knowledge of integrated/inter-disciplinary modelling/assessment approaches;
- Knowledge of the key organisations involved in the global environmental/bio-physical and socio-economic modelling/research communities, and key initiatives/projects;
- Knowledge of key global information sources / data sets (e.g. on natural capital, ecosystem services, biodiversity, environment-economy linkages, economic/sectoral activities etc);
- Good communication skills and ability to organise/facilitate stakeholder events/workshops.

Other skills/experience which would also be highly advantageous includes:

- Knowledge/understanding of IPBES processes/priorities and key organisations involved;
- Understanding of the policy context, particularly inter-governmental processes related to the CBD, SDGs and UNFCCC.

Contact person

The primary point of contact for the work will be:

Toby Roxburgh (Economics Adviser, WWF-UK)
Email: troxburgh@wwf.org.uk,
Tel: +44(0)1483 412234 / +44 (0)7990 531012
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www: wwf.org.uk

Proposal selection and study delivery will be overseen by a steering group consisting of WWF staff and representatives from other relevant organisations.