IPBES AND PAYMENTS FOR ECOSYSTEM SERVICES AFFECTED BY BIODIVERSITY CHANGE

Charles Perrings

Arizona State University

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The four functions of IPBES

Knowledge generation Identify knowledge needs of policymakers, and catalyse efforts to generate new knowledge

Assessment Deliver global, regional and thematic assessments, and promote and catalyse support for sub-global assessment

Policy support tools Identify policy relevant tools/methodologies, facilitate their use, and promote and catalyse their further development

Capacity building Prioritize key capacity building needs, and provide and call for financial and other support for priority needs

The four functions of IPBES

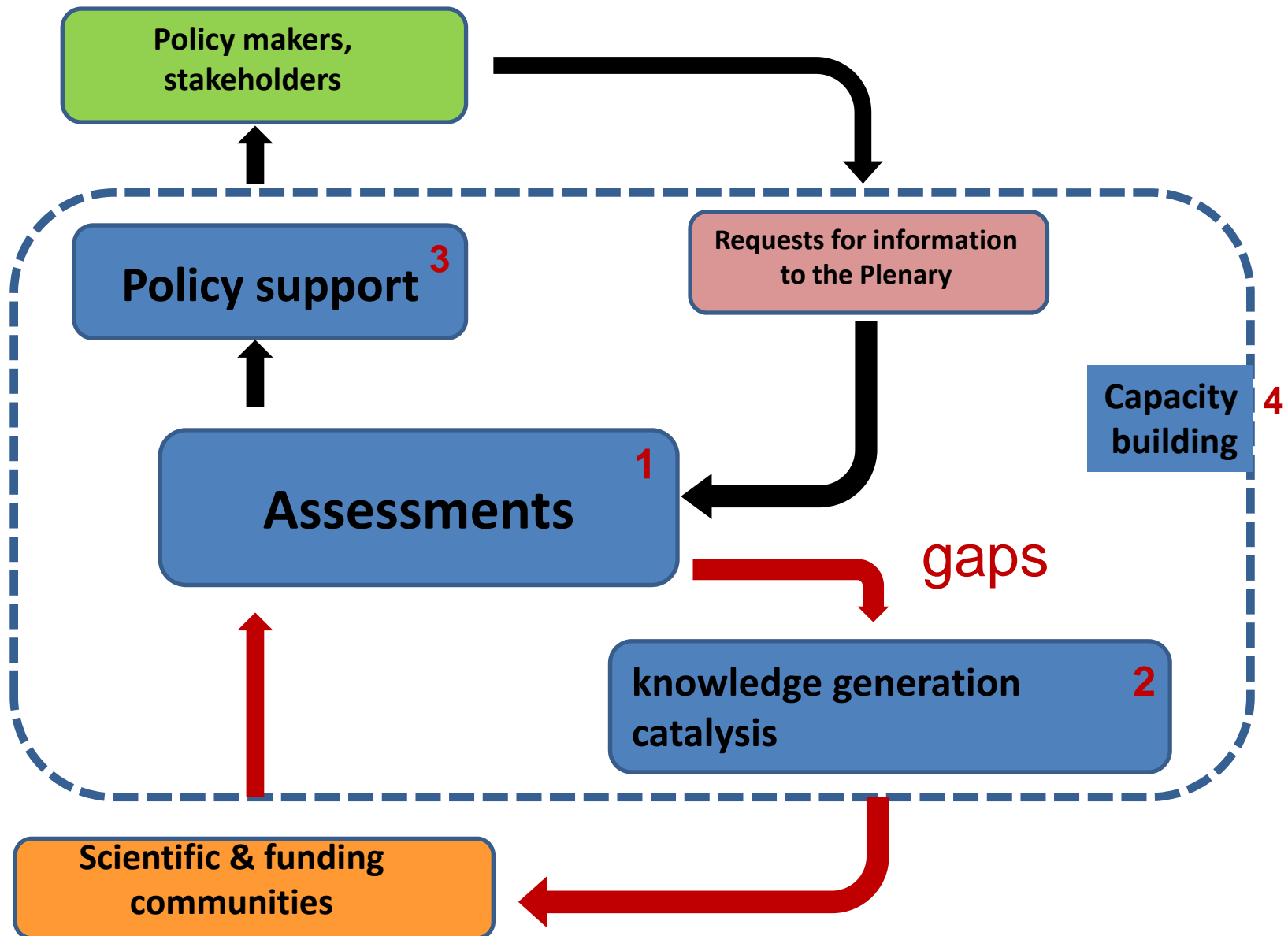|	
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The four functions of IPBES

Who are the policy makers?

- National governments

- Convention on Biological Diversity

- The six named 'biodiversity-related conventions'*

- Multilateral environmental agreements related to biodiversity and ecosystem services

- United Nations agencies

- Other stakeholders

* Convention Concerning the Protection of the World Cultural and Natural Heritage; Convention on International Trade in Endangered Species of Wild Fauna and Flora; Convention on Migratory Species; Convention on Wetlands of International Importance; the International Treaty on Plant Genetic Resources for Food and Agriculture; United Nations Convention to Combat Desertification

What does 'policy support' mean?

- "Policy support tools and methodologies are approaches and techniques, based on science and other knowledge systems, that can inform and assist the different phases of policy making and implementation at local, national and international levels."

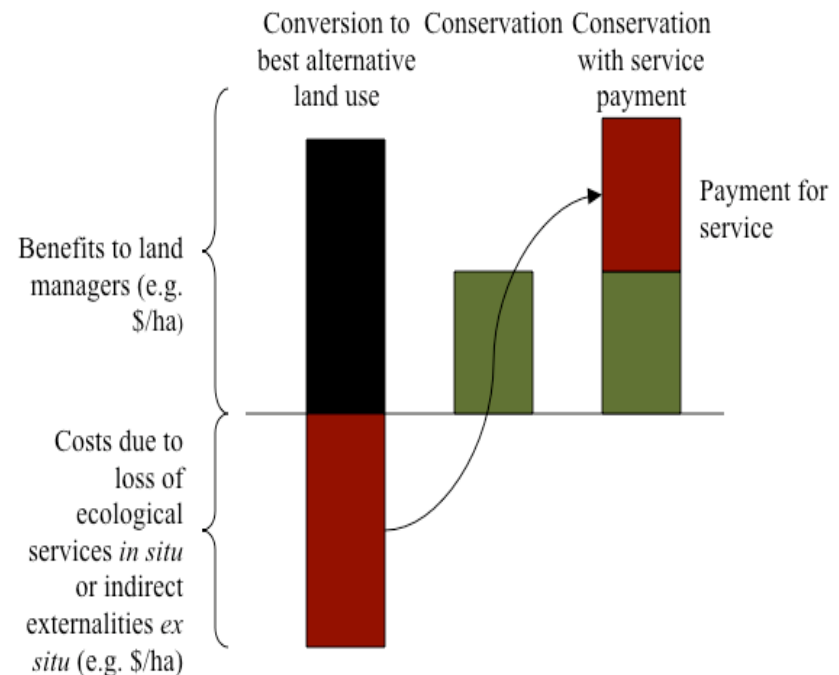- Assessments should help evaluate feasible policy and management options
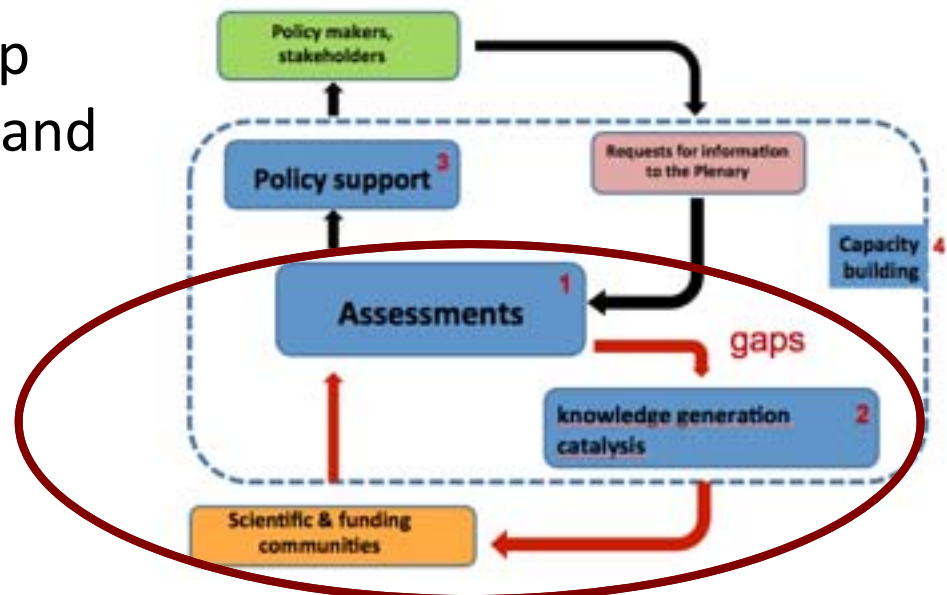
What data do policy-makers need?

- conditional predictions of the consequences of BES policies under consideration by national governments

- information about when the effects of local biodiversity change are contained within a decision-maker's jurisdiction, and when they are not

- implies integrated models of social and environmental change capable of providing conditional predictions of the consequences of real BES policy options

Payments for Ecosystem Services

- PES currently popular mechanism for compensating landholders for off-site benefits

- Precursors include
  - national agri-environmental schemes that pay land owners for providing national environmental public goods
  - international mechanisms for funding global environmental public goods (GEF, World Bank)

Conversion to best alternative land use Conservation Conservation with service payment

Benefits to land managers (e.g. $/ha)

Payment for service

Costs due to loss of ecological services *in situ* or indirect externalities *ex situ* (e.g. $/ha)
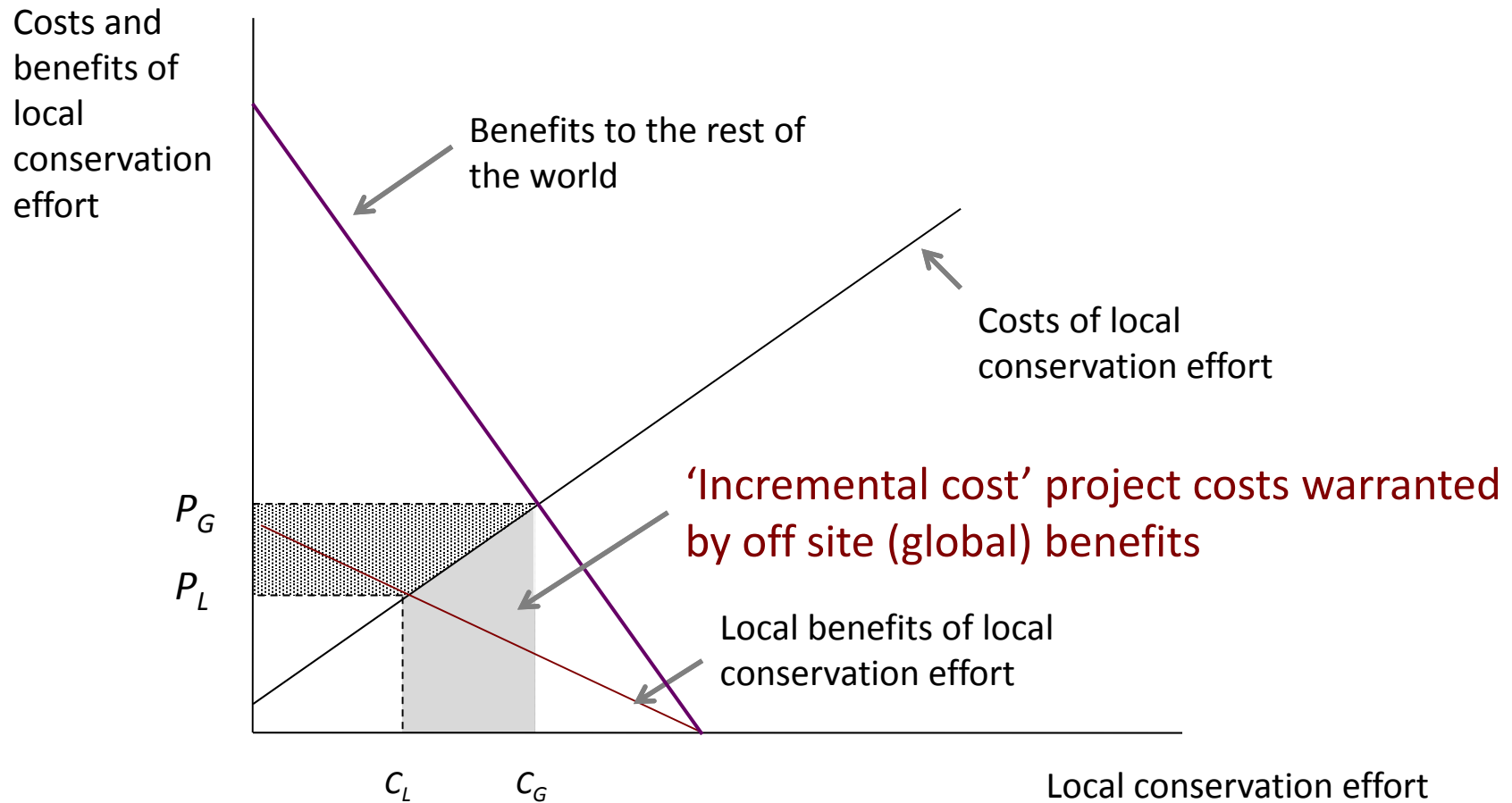
Kinzig, A.P., Perrings, C., Chapin, F.S., Polasky, S., Smith, V.K., Tilman, D. & Turner, B.L. (2011) Paying for Ecosystem Services: Promise and Peril. *Science*, **334**, 603-604.

Adapted from Pagiola, S. (2002) Paying for water services in Central America: learning from Costa Rica. *Selling Forest Environmental Services: Market-Based Mechanisms for Conservation and Development (ed. by S.B. Pagiola, J. And Landell-Mills, N.), pp 37-62. Earthscan, London..*

The Global Environment Facility (GEF)

- established in 1991 to finance protection of the global environment

- initially designed to fund the 'incremental' cost of national projects offering global benefits

- incremental cost is the difference between the cost of a project that would be warranted taking into account only the national benefits, and the cost that is warranted taking into account global benefits

Incremental cost

Costs and benefits of local conservation effort

Benefits to the rest of the world

Costs of local conservation effort

'Incremental cost' project costs warranted by off site (global) benefits

Local benefits of local conservation effort

P_G

P_L

C_L C_G

Local conservation effort

PES schemes—Reducing Emissions from Deforestation and Forest Degradation scheme (REDD)

- designed to mitigate climate change by reducing the carbon emissions associated with deforestation
- also aims to encourage adoption of complementary 'co-benefits'
- co-benefits include
  - enhanced biodiversity conservation
  - enhanced water quantity and quality
  - pro-poor development
- three phases
  - strategy development and core capacity building
  - support for national policies
  - compensation mechanism for emission reductions conditional on results

IPBES and PES

IPBES assessments

- aim to record biodiversity change and its impact on ecosystem services in space and over time
- may identify areas where national action is most likely to yield international benefits

IPBES 'scenarios'

- aim to project the future consequences of specific biodiversity/ecosystem services policies and programs
- may provide the scientific information needed to project the global benefits offered by national biodiversity/ecosystem services management actions

IPBES and the GEF

- IPBES assessments and scenarios may be designed to inform global investment in local biodiversity management in three main sectors
  - health: pathogens, disease vectors and reservoirs, medicinal/pharmaceutical plants
  - agriculture: pests, pathogens, symbionts, in situ and ex situ conservation of crop/livestock genetic diversity, landraces, wild crop relatives
  - conservation: wild living species

Pollination assessment

- **75% of global crops** benefit from insect pollination (Klein et al. 2007)
  - **Food security**
  - **Healthy diets** (Eilers et al. 2011)
- **78-94% of wildflowers** also depend on insect pollination (Ollerton et al. 2011)
- **Estimated annual value of insect pollination:**
  - **Globally: Int$ 361 billion** (Lautenbach et al. 2012)
  - **Plus non-market values**

Pollination assessment

- review the diversity of pollinators and their role in supporting food production
- assess the drivers of change of pollinators, pollination networks & pollination services
- assess the state of and trends in pollinators, pollination networks & pollination services
- assess market and non-market valuation of pollination
- assess responses to risks associated with the degradation of pollination services & opportunities to restore & strengthen those services

What implications does this have for the roles of science in policy?

- IPBES should differ from previous assessments in the kind of support it can offer decision-makers

- IPBES should help countries evaluate the relative merits of specific strategies (mitigation, adaptation, and stabilization)

- specific strategies should be identified by the plenary and not by the scientific community (as in earlier assessments)

- assessments should include quantitative projections of the consequences of those options in biophysical and value terms

Perrings, C., A. Duraiappah, A. Larigauderie, and H. Mooney. 2011. The Biodiversity and Ecosystem Services Science-Policy Interface. Science **331**:1139-1140.

Last words

- Thanks to Anne Larigauderie for slides on the form and functions of IPBES

- For details of the arguments developed here see:

  Perrings, C. (2014) *Our Uncommon Heritage: Biodiversity, Ecosystem Services and Human Wellbeing*. Cambridge University Press, Cambridge.