It ain't all about 'the environment'!

Dr Mark Everard
Thursday 19th April 2012

River Restoration Centre, Annual Network Conference
A riverful of ecosystem services...
Spot the river…

Image courtesy Google Maps UK
Turning our backs...

- Ugly
- Litter
- Disease - Rats, Weil’s disease, microbes
- Drowning
- Polluted
- Low biodiversity

- A drain, not a gain

• WE’VE DONE THAT TO IT!
Urban rivers can retain many services…
People benefit from rivers globally…

- Downtown Durban, Umgeni River, South Africa
- Sand mining, Ramganga River, Northern India
- Washing and water, Cauvery River, Southern India
...but also suffer from their degradation

What value, beyond waste disposal?

What costs, and to whom, from lost services?
- Health, aesthetic, food, amenity, etc…
Many urban rivers provide some services...
Real benefits for real people

Multiple simultaneous ecosystem services

- Health
- Access and amenity
- Economic resources
- Healthier food
- Natural fertilisation of floodplains
- Recruitment to fisheries
- Improved air quality
- Breaking down ‘heat islands’
- Climate regulation
- Habitat for wildlife
- Spiritual places
- Educational resources
- Etc…

2004/5

2nd June 2011
Case studies valuing benefits and costs...

- TAMAR 2000 (catchment restoration)

- ALKBOROUGH FLATS (managed realignment)

- RIVER GLAVEN Sea Trout Restoration Project

- Upper BRISTOL AVON Buffer Zone (just 330 metres)

- The MAYES BROOK RESTORATION in Mayesbrook Park, East London

- The proposed PANCHESHWAR DAM, India/Nepal

How ‘real’ are these benefits/costs?

- Ecosystem services are about DIFFERENT STAKEHOLDERS…
- Do we care equally about all of them?
- What are the ethics of favouring just the influential?
- What are the wider costs of narrow benefit-taking?
- How are costs and benefits distributed across society (and time)?
- What is the legacy for everyone?

- How ‘real’ is an economy that doesn’t recognise them?
Capturing the benefits #01

Mainstreaming

Breaking out of siloes…

• …resource security…

• …planning…

• …national accounts…

• …including ‘the environment’!

11th June 2011

30th Jan 2012
Capturing the benefits #02

Health
• ‘Green exercise‘ + therapy, greening the NHS estate
• Physical and mental health

Urban pollution
• Fall-out of particulates, breaking 'heat islands'

Flooding
• Coastal, catchment-scale
• Local SuDS and ‘green infrastructure’

Sense of place
• Real estate, tourism and community values
For example, managed realignment...

Declining value farmed land

Costly ‘hard’ defence

‘Coastal squeeze’

Sea level rise

Unsustainable benefit:cost

Some loss of farmed land

Smaller set-back defence

Example ecosystem service benefits:
- Natural energy dissipation
- Flood storage
- Carbon sequestration
- Habitat for wildlife
- Fish recruitment
- Resilience
- Shellfish/Salicornia harvesting

Multiple benefits for smaller costs
## Planning for multiple benefits in MR...

### Provisioning services
- Fresh water
- Food (e.g., crops, fruit, fish, etc.)
- Fibre and fuel (e.g., timber, wool, etc.)
- Genetic resources (used for crop/stock breeding and biotechnology)
- Biochemicals, natural medicines, pharmaceuticals
- Ornamental resources (e.g., shells)

### Regulatory services
- Air quality regulation
- Climate regulation (local temperature, precipitation, etc.)
- Water regulation (timing/scale of runoff, flooding, etc.)
- Natural hazard regulation (e.g., storm protection)
- Pest regulation
- Disease regulation
- Water purification and waste treatment
- Pollination

### Cultural services
- Cultural heritage
- Recreation and tourism
- Aesthetic value
- Spiritual and religious value
- Inspiration of art, folklore, architecture, etc.
- Social relations (e.g., fishing, grazing, crop communities)

### Supporting services
- Soil formation
- Primary production
- Nutrient cycling (water recirculation in landscape)
- Water recycling
- Photosynthesis (production of atmospheric oxygen)
- Provision of habitat

Optimising public value
‘Green infrastructure’…

Unsustainable
Developing without regard to ecosystems

Sustainable
Retaining ecosystems and services

In situ ecosystem service benefits
- Habitat for wildlife
- Flood storage
- Air cooling/microclimate
- Carbon sequestration
- Resilience
- Food production

Net import ecosystem services
Food, water, cooling, waste disp, employment, green spaces, etc.

Water system

Net import ecosystem services
Food, water, cooling, waste disp, employment, green spaces, etc.
‘Systemic solutions’…

Yesterday’s solutions: Discipline-focused

AMP1-4: River ecology/use at cost to climate

Carbon capture at cost to ???

Tomorrow’s solutions: Multiple service benefits

• Integrated constructed wetlands (ICW)
• Wastewater treatment
• Carbon storage
• Amenity (leisure areas and fish!)
• Wildlife
• Hydrology
• Etc…

• Managed realignment
• Green Infrastructure
• SuDS
• Mixed use urban design
• Other systemic solutions…

Outcomes for the whole system
PES: ‘Paying for ecosystem services’...
...capturing the value of ecosystem processes

• Water resources
• Flood risk
• Fisheries/conservation
• Amenity?
• Biodiversity?

• South Africa, Costa Rica, New Zealand, Germany, US, UK...

• OECD (2010) estimate 300+ PES or PES-like schemes in the world

• MAJOR DEFRA PES PROGRAMME (White Paper commitment)
  ➢ Development of a Defra ‘PES Guide’ (led by URS)
The language of ‘Nice to have’?

‘Environment’ still an external cost and constraint

Connecting the rest of the ‘triple bottom line’
Social dimension: environmental justice

- All services are about different stakeholder groups
- Who wins and who loses?
- Sectors, international, intergenerational
  - From the proposed Pancheshwar Dam…
  - …to the neglected Chippenham stream
- Who is deemed to matter in decision-making?
Economic dimension: markets

- Altruism perhaps the main historic driver
- Evidence of wider public benefits (and costs!)
  - Health, planning, drainage, resource security…

The full armoury of economic tools:

- Self-beneficial action
- PES development of new markets
- Internalising wider costs into planning
- National accounts
- Corporate long-term stability
- Etc…
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- Nature will be OK without us…
  - …an unquenchable commitment to survive (if only cockroaches!)

- Ecosystem services/sustainability are ANTHROPOCENTRIC…
  - …a decent future for all

- Breaking out of siloed ‘environmental’ thinking…
  - …as narrow as other disciplinary thinking

- Championing diverse and real ecosystem beneficiaries…
  - …for good economic reasons
  - …as a social duty
  - …because the natural world underpins future human wellbeing…
  - …and also has inherent value
“Discuss!”

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