United Nations Decade on Biodiversity

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HIGH-LEVEL PANEL ON GLOBAL ASSESSMENT OF RESOURCES FOR IMPLEMENTING THE STRATEGIC PLAN FOR BIODIVERSITY 2011-2020

Presentation to the Regional Workshop for Asia and the Pacific on Resource Mobilization

Bangkok, 6 May 2014

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Convention on Biological Diversity

Introduction to the High-Level Panel

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In 2012, **the first High-Level Panel** reported on 'Resourcing the Aichi Biodiversity Targets' to COP-11.

In Decision XI/4, COP-11 welcomed the initial findings, and invited the Panel, in collaboration with other relevant initiatives that could **provide a more bottom-up approach**, to continue its work with a broadened composition and to report back on the results of its work to COP-12.

The High-Level Panel has been **expanded to create a regionally-balanced Panel of fifteen members**.

Results of the High-Level Panel (Phase I)

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The Panel's first phase produced eight key messages:

1. Implementation and delivery of the Targets requires the development of an appropriate and coherent **political and institutional framework and strong political will**, particularly at the national and regional level.

2. Investment in natural capital will deliver **significant co-benefits** for sustainable development.

3. Existing evidence suggests that **benefits are likely to significantly outweigh costs**.

4. There are clear **differences in the relative scale of investment** required to deliver the various Targets. In addition, the investment needed to deliver a Target is not necessarily correlated to its importance.

Results of the High-Level Panel (Phase I)

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5. **Many factors affect the magnitude of the estimates of the investments needed** to achieve each of the Targets. These include the scope of the activities to be costed and associated investment opportunities and the potential synergies among Targets as well as uncertainties arising from limitations in data and methodologies.

6. There are **many inter-linkages and co-dependencies** to consider both between the Targets themselves, and between the Targets and other national policy goals.

7. **Funding from a diverse range of international and national sources**, and across different policy areas is required to secure the full range of economic and social benefits to be gained from meeting the Aichi Targets.

8. **Further research** is vital to help further develop and refine the estimates.

Results of the High-Level Panel (Phase I)

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It was estimated that **one-off investments account for between 60% and 70% of the overall global resource needs** for delivering the Targets over the 2013 to 2020 period.

Through simple addition of the resource requirements identified for each Target, the costs for implementing the twenty Aichi Biodiversity Targets were estimated at **between US$ 150 billion and US$ 440 billion per year**.

However, it is expected that these resource requirements neither should nor could be met by biodiversity finance alone, and there is potential for considerable synergies among the Targets, so that **coordinated action could substantially reduce the total estimate**.

Results of the High-Level Panel (Phase I)

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Strategic Goal	Target	Investment needs (US$ million)	Recurrent expenditure per annum (US$ million)	Average annual expenditure (2013 – 2020) (US$ million)
A: Address the underlying causes of biodiversity loss by mainstreaming biodiversity across government and society	1: Awareness raising	54	440 – 1,400	280 – 890
	2: Biodiversity values	450 – 610	70 – 130	100 – 160
	3: Incentives	1,300 – 2,000	8 – 15	170 – 270
	4: Sustainable consumption & production	55 – 107	8 – 15	12 – 23
B: Reduce the direct pressures on biodiversity and promote sustainable use	5: Reducing habitat loss (forests and wetlands)	152,300 – 288,800	13,300 – 13,700	39,200 – 52,100
	6: Fisheries	129,900 – 292,200	800 – 3,200	16,900 – 40,000
	7: Sustainable Agriculture, Aquaculture and Forestry	20,800 – 21,700	10,700 – 11,000	13,200 – 13,600
	8: Pollution	77,600 – 772,700	24,400 – 42,700	35,400 – 139,200
	9: Invasive alien species	34,100 – 43,900	21,005 – 50,100	23,300 – 52,900
	10: Coral reefs	600 – 960	6 – 10	80 – 130
C: To improve the status of biodiversity by safeguarding ecosystems, species and genetic diversity	11: Protected areas (terrestrial and marine)	66,100 – 626,400	970 – 6,700	9,200 – 85,000
	12: Species conservation	–	3,400 – 4,800	3,400 – 4,800
	13: Genetic diversity	550 – 1,400	15 – 17	80 – 190
D: Enhance the benefits to all from biodiversity and ecosystem services	14: Ecosystem restoration	30,000 – 299,900	–	3,750 – 37,500
	15: Restoration of forests	100	6,400	6,400
	16: Nagoya Protocol	55 – 313	–	7 – 39
E: Enhance implementation through participatory planning, knowledge management and capacity building	17: NBSAPs	114 – 1,100	110 – 560	50 – 170
	18: Traditional knowledge	210 – 340	210 – 340	210 – 340
	19: Science base	1,800 – 4,200	1,400 – 1,600	1,600 – 2,100
	20: Mobilisation of financial resources	10 – 79	3 – 20	4 – 30

Objectives of the 2nd High-Level Panel

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The 2nd High-Level Panel is considering the **range of the costs of implementing the activities needed** to achieve the targets, and **identifying the opportunities** to most cost effectively secure such benefits through actions **both within and outside the biodiversity sector**.

In response to the following questions, the benefits of meeting the Aichi Biodiversity Targets will be assessed by **examining both the positive impacts on biodiversity directly and the wider benefits to society** that result from the investments and policy developments required:

- Benefits
- Investment needs
- Resource requirements
- Policy alignment and development
- Cost effectiveness
- Benefits and costs

Emerging Key Messages of the High-Level Panel (Phase 2)

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1. **The contribution of biodiversity and ecosystems to sustainable development**
   Biodiversity and ecosystems can deliver sustainable development goals at global, national and local scales, including on food security, water security, livelihoods and disaster risk reduction.

2. **The contribution of biodiversity and ecosystems to climate mitigation, adaptation and resilience**
   Investing in biodiversity and ecosystems can effectively reduce national and community vulnerability, increase resilience to local, national climate-related impacts, and contribute significantly to climate mitigation and adaptation.

3. **Investments in biodiversity and ecosystems can strengthen the provision of ecosystem goods and services on which vulnerable populations depend for food security, economic opportunities and human well-being/quality of life**
   As biodiversity loss disproportionately affects vulnerable populations, appropriate investments can help ensure the provision of key services, and access to critical biodiversity resources.

Emerging Key Messages of the High-Level Panel (Phase 2)

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4. **Biodiversity and ecosystems provides insurance**
   Investments made now will maintain and enhance future investment options, including for the private sector, provide insurance against uncertain and accelerating future changes, and will likely decrease the cost of future biodiversity management and interventions.

5. **Enhanced synergies and promoting sectoral alignment are needed**
   There are significant alignment between the Aichi Targets and other policy agendas, including development, growth, poverty alleviation, climate change, agriculture, fisheries, water and health.

6. **Participation, institutions and governance must be improved**
   Developing and operationalising cohesive, well-designed institutions, rational policies and effective policy frameworks are a prerequisite for effective and efficient biodiversity financing systems. Effective and efficient biodiversity financing systems may be as important, if not more important for effective implementation, as lack of finance.

Emerging Key Messages of the High-Level Panel (Phase 2)

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7. **Design and implement appropriate policy and financial instruments**
   Resource mobilization must include the promotion of market efficiency, market access, income diversification, fiscal reform and private sector investments.

8. **Monetary and non-monetary benefits outweigh costs of biodiversity conservation and sustainable use**
   Global per capita benefits are estimated to exceed investment costs from biodiversity conservation and sustainable use.

9. **Investments must be increased substantially to bridge financing gaps**
   The financial gap can be closed through realigning existing expenditures with biodiversity objectives, and improved sectoral integration, by mobilizing resources.

Overview of regional reviews

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There is a substantial quantity of evidence on the benefits of conservation and sustainable use of biodiversity in Asia and Oceania, which largely pre-dates and does not relate directly to the achievement of the Aichi Targets.

This evidence is predominantly for South-Eastern, Eastern & Southern Asia, and Australia & New Zealand. There is relatively little evidence for Western & Central Asia and the Pacific Island Countries.

Much of the evidence on the benefits of the sustainable use of biodiversity is for ecosystem specific local or sub-national studies, which limits the possibility of providing a coherent overview of the range of benefits across the region and across the Targets.

Where evidence is available, generally the benefits of biodiversity conservation are shown to be substantial and higher than the costs of conservation in most cases. Cases that find negative net benefits for conservation are due to either low local demand or extremely high opportunity costs of conservation.

Overview of regional reviews

A common finding from cost-benefit analyses of conservation in Asia is that net benefits are often locally negative (i.e. local resource users lose out, particularly in the short term) but nationally or globally positive (i.e. beneficiaries that use natural resources indirectly gain from conservation).

There is relatively little quantitative evidence on the investment needs, resource requirements and cost-effectiveness of options to meet the Aichi Targets. Similarly the evidence base for policy alignment is small.

It is generally recognised that countries need to invest in stronger enforcement and institutional frameworks as a basis for implementing environmental management.

For most countries (with some possible exceptions), there is likely to be a substantial gap between available and required resources for achieving the Aichi Targets.

There is some evidence that investments in conservation and sustainable use of biodiversity may yield increasing returns to scale.

Overview of regional reviews

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Methodology

The database of collected **evidence consists of 392 existing published papers and reports (Asia)** and **142 existing published papers and reports (Oceania)** related to biodiversity conservation strategy. The sources of information include:

- Academic papers in published journals
- National biodiversity strategy and action plans
- International studies such as Economy and Environment Program for the Southeast Asia (EEPSEA), CBD, TEEB country studies, etc.
- Assessments of the biodiversity conservation strategies by NGOs,
- Country submissions to CBD on resource requirements
- Unpublished data and assessments by a range of stakeholders and initiatives

The current collection of evidence consists of:

- 4 for Central Asia
- 63 for Eastern Asia
- 74 for Southern Asia
- 200 for South-Eastern Asia
- 41 for Western Asia
- 71 for Australasia and New Zealand
- 30 for Melanesia
- 16 for Micronesia
- 16 for Polynesia
- 9 for Cross Sub-region

Overview of Asia review

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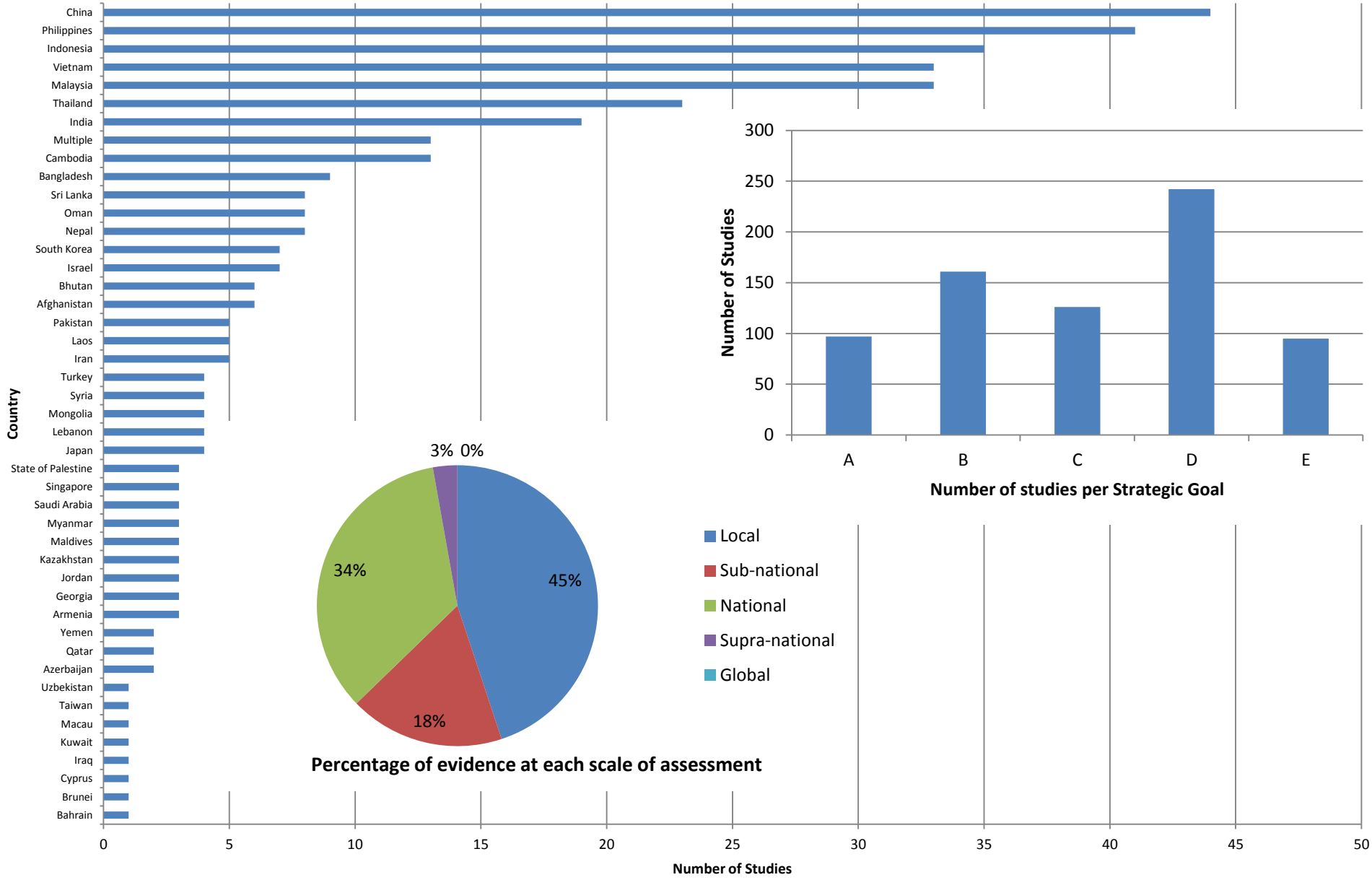

Overview of Oceania review

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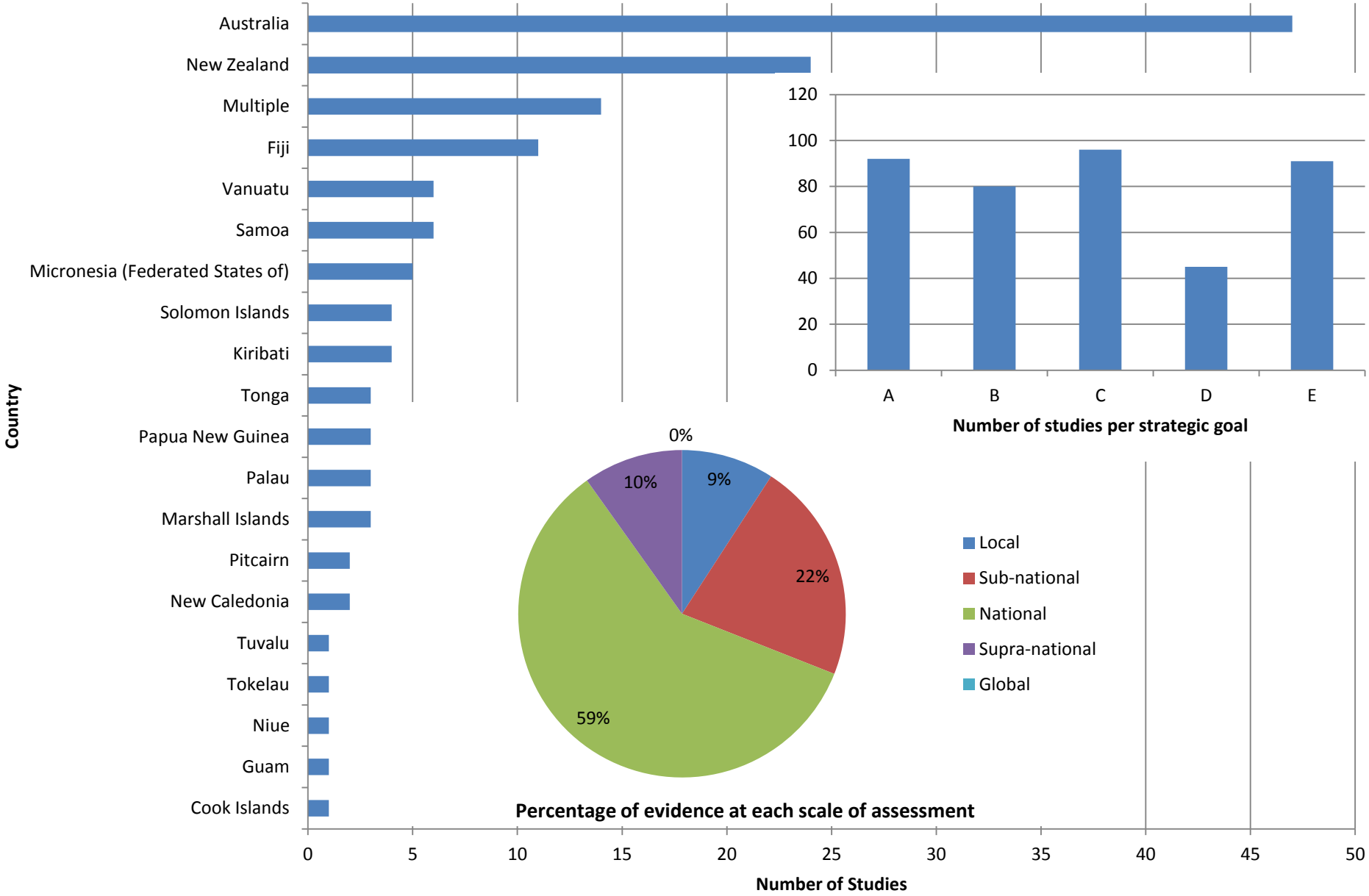

Conclusions: Benefits

Case study: Ecosystem services from Seoul's Greenbelt, South Korea

Estimates of the value of ecosystem services provided by the forest and cropland in Greenbelt, which is a development restricted area for nature protection, for over 24 million inhabitants in the Seoul metropolitan area.

The metropolitan area of Seoul covers 31 cities and districts and covers 11.8% (11,806 km^2) of national area. The Greenbelt of the Seoul metropolitan was designated to secure green space and to prevent the spread of the chaotic expansion of Seoul in the period between 1971 and 1976. The Greenbelt has sustainably provided ecological soundness and various benefits from its ecosystem.

The objective of this study is to estimate the value of natural assets and provide basic data to reflect its value for policy decisions. This paper suggests that the total economic values of ecosystem services of the Greenbelt are KRW 2,463 billion (US$ 2.3 billion).

Conclusions: Benefits

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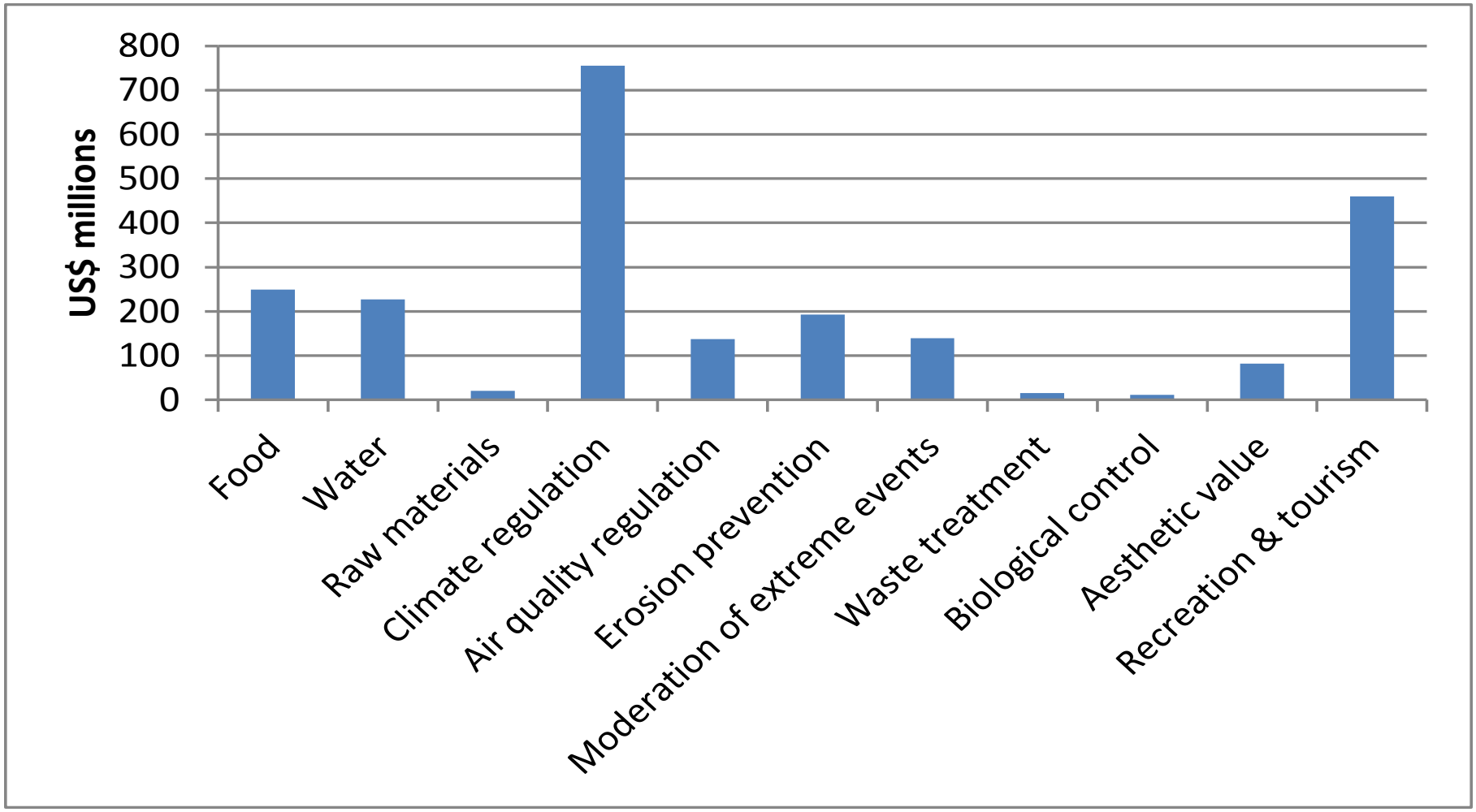

Annual value of ecosystem services from Seoul metropolitan area greenbelt (millions of US$)

Conclusions: Benefits

Case study: The Economic Value of the Coral Reefs of Saipan, Commonwealth of the Northern Mariana Islands

At the core of the economic value of coral reefs on Saipan are the various ecosystem functions associated with these marine systems. These, in turn, translate into reef-associated goods and services (e.g. tourism, fisheries). The Total Economic Value (TEV) which was estimated at US$61.16 million per year. Market values make up 73% of the TEV, while the remaining 27% consist of non-market values. Due to uncertainties in the data and the analysis, the TEV may vary between US$42 million and US$76 million per year. With an annual value of US$42.31 million, the tourism industry is by far the greatest beneficiary of the services provided by coral reefs on Saipan.

Generally, the beneficiaries of the reefs' goods and services are not spread evenly throughout Saipan, but vary from location to location. Although the average value of reefs per square kilometer amounted to US$0.8 million, the highest value per square kilometer was around US$9 million. This highest value category is predominantly comprised of the most popular diving and snorkeling sites. Having compared the distribution of reefs' total economic value and their anthropogenic threats, we conclude that, in general, the more valuable the reef, the poorer their condition and the greater their threats.

Conclusions: Benefits

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Case study: The economic links between biodiversity & poverty reduction in Lao PDR

The population of Lao PDR are highly dependent on biodiversity. It is estimated that more than 80% of the country's 5.5 million people live in rural areas, who also depend on harvesting wild plant and animal products for their day-to-day subsistence income.

A study was undertaken to understand the benefits of the Nam Et-Phou Loei Protected Area and its surrounding villages. The reported economic value of forest product utilisation for villages is estimated to be worth more than US$ 1.12 million per year or US$313 per household. Home consumption made up the bulk of the economic value with an average of US$229/household/yr compared to cash income of US$84/household/yr.

The value of forest use was highest for the households who live closest to the PA (US$500 for villages located inside, US$270 bordering and US$160 outside the PA).

At the national level, biodiversity was estimated to be worth around US$650 million/yr and contributes directly or indirectly to 75% of the country's per capita GDP, more than 90% of employment and almost 60% of exports and foreign exchange earnings.

Conclusions: Investment needs

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- *What types of investments and activities are needed to deliver the Aichi targets and to secure these benefits?*

National Reports and NBSAPs report mostly qualitative investments and activities needed to deliver the Aichi Targets. Some of the challenges are: lack of public awareness, lack of political will or capacity to enforce existing laws (from lack of staff and staff training as well as physical capital, e.g. vehicles), and an absence of adequate scientific knowledge and research skills.

- *Where would these investments be best directed or focused?*

In Asia, major regional concerns are deforestation, status of endemic (agro)biodiversity, uncontrolled urban and infrastructural development, pollution, and overexploitation of (water) resources. In Oceania, a greater focus was placed on wetland banking, restoration of wetlands through the removal of dams, coastal dikes or new constructed wetlands, forest landscape restoration (including restoring functionality and productive capacity) and restoration of coral reefs.

Conclusions: Resource needs

Conserving Sundarbans in Bangladesh

Bangladesh houses the world's largest stretch of mangrove forests and plantations. People extract various goods and services from the mangroves and are one of the most critical livelihood sources for people of Bangladesh. Nevertheless the mangrove forests are depleting. Mangrove plantations are increasing in area but they are losing growing stock.

A project supported by Asian Development Bank (ADB) – "Sunderbans Biodiversity Conservation Project – has instituted a comprehensive fisheries management system. At a cost of about US$77 million. ADB was to provide a concessionary loan of US$37.0 million and the Nordic Development Fund (NDF) was to provide a concessionary loan of US$4.5 million. The Global Environment Facility (GEF) was to provide grant financing of US$12.2 million. The Government of Bangladesh (GOB) was to finance US$16.1 million and the Palli Karma-Sahayak Foundation (PKSF) was to contribute the equivalent of US$6.8 million of its own funds as a line of credit for microfinance. Local beneficiaries and NGOs were to contribute the equivalent of US$5.6 million.

Conclusions: Resource needs

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Case study: Cost of macaque eradication, Angaur island, Palau

Crab-eating macaques (*Macaca fascicularis*) were introduced to Angaur island, Palau from Indonesia in the early 1900s. The population is now approximately 2,000 and represents an immediate threat to economic livelihoods, traditional culture, human health, and Palau's unique biodiversity. Macaques are expected to invade over 90% of Palau's terrestrial area, and impact all of Palau's key biodiversity areas. Endemic Palauan birds, reptiles, and plants would experience a heightened risk of extinction as macaques invade new islands.

Removal of the invasive macaques is a high conservation priority for Palau. Significant political and community support for this project exists within Palau, particularly in Angaur owing to importance to their livelihoods and culture.

The eradication of macaques from Angaur is deemed to be feasible but subject to a number of initial preparatory steps, including legal and regulatory requirements (e.g. allowing the use of firearms), technical (developing larger traps that can catch whole troops of macaques) and social (involvement of the local community and avoidance of harvesting toxic baits). The cost of eradication is estimated at between US$2-4 million.

Conclusions: Resource needs

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Case study: Assessment of forest management for preventing forest fire, Indonesia

In Indonesia, uncontrolled forest fires have been identified as a key cause of habitat destruction. The haze produced causes significant pollution problems for people in the country and in surrounding nations.

A key problem identified was weak enforcement of forest conservation rules and regulations caused by a wide range of resource and institutional failures. The total additional fund required to implement the nine high priorities was estimated at 91,684 million rupiah (approximately USD$ 8.185 million) or 315% of the existing status quo amount for land and forest fire management.

Of the proposed policy options, the study recommended included strengthening policy implementation in the field, establishing an effective reward and punishment system, and an institution to monitor and record stakeholder compliance and violation.

Conclusions: Policy alignment & development

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Case study: Mainstreaming biodiversity into national poverty reduction policies, India

The Mahatma Gandhi National Rural Employment Guarantee Act (2005) is the largest social security scheme in the world which has created more than five million green jobs in activities such as afforestation, water harvesting, soil conservation and land development.

With a total outlay of approximately US$ 6 billion in 2012-13, the scheme has also empowered vulnerable sections of society, with more than one-third of the jobs in 2012-13 allocated to women and more than two-fifth of the jobs allocated to other vulnerable sections.

Such activities thus have the potential to deliver joint benefits of empowerment, poverty reduction, employment, creation of green infrastructure and biodiversity conservation.

Conclusions: Cost effectiveness

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Case study: Effectiveness of direct payments for biodiversity conservation, Cambodia

The annual cost of a program to provide conditional payments to local people to protect nests (most of the species were highly threatened by the collection of eggs and chicks) is $30,000, of which 71–78% were payments made to local people and 22–29% were monitoring costs. The average cost per protected nest ranges between $ 66-120 per year. The effectiveness of the program was evaluated for the period 2009-2011 through a system of monitoring protected sites and unprotected control sites.

Protected sites had substantially higher nesting success rates than studied control sites.

However, payments did not influence other threats to species (e.g. land clearance) and have failed to arrest declines in at least one species' population. The average payment per protector was a significant contribution to incomes in remote rural villages but only benefited a small proportion of people, causing some jealousy and deliberate disturbance of nesting birds.

The program demonstrates that direct payments can be a highly effective conservation tool in those cases where payments correctly target the cause of biodiversity loss.

Conclusions: Cost effectiveness

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Case study: Cost-effectiveness of combined carbon and biodiversity investments in Australian agro-ecosystems

Putting a price on carbon can generate demand for carbon offsets which in-turn could drive investment in tree-based carbon sequestration in agricultural landscapes. A risk is that carbon planting will be fast growing monoculture species that maximise the sequestration of carbon; these planting would have very little benefits for biodiversity.

In Australia, it has been demonstrated that in the presence of a carbon market, direct payment to private landowners of between AU$7/ha/year to AU$125/ha/yr may be sufficient to augment the economic returns from a carbon market and encourage tree plantings in agricultural landscapes that contribute more to the restoration of landscapes and endangered species habitat than otherwise achieved by carbon monocultures. Also shown is how in the presence of a carbon market, the state of South Australia could achieve an ecological restoration target of 30% of agricultural landscapes covered by representative samples of biologically diverse vegetation with high connectivity and low fragmentation (i.e. 1.1 million hectares of biodiversity plantings) for a total investment of AU$1.8 billion. This may appear high, but the investment is inclusive of opportunity cost of removing land from agricultural production.

Conclusions: Costs & benefits

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Case study: Costs and benefits of water catchment conservation, Upper Tuul watershed, Mongolia

This case study looks at the conservation of the Tuul basin, a catchment area of almost 50,000 km^2 from which Ulaanbaatar derives its water.

A recent study shows that as the ecosystem is degraded and forest cover is lost; average runoff will increase and the river's mean annual maximum and low flows will be intensified. Diminished discharge would lead to a lowering of the groundwater table of between 0.24 metres (under a continuation of the status quo) and 0.4 metres (under a scenario of rapid degradation).

In 25 years' time, daily water supply in Ulaanbaatar would be reduced by some 32,000 to 52,000m^3 respectively. In contrast, conservation and sustainable use of the upper watershed would protect current river flow and groundwater levels.

The conservation and sustainable use scenario yields a net present value of USD 560 million over 25 years.

Conclusions: Costs & benefits

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Case study: Costs and benefits of forest conservation, Leuser ecosystem, Sumatra, Indonesia

This case study describes the value of a broad set of ecosystem services provided by the Leuser forest ecosystem in Sumatra, Indonesia.

The case study highlights the distribution of ecosystem service benefits across different stakeholders and the trade-off between short term gains for some versus larger long term losses for others. The analysis shows that the net benefits of conservation outweigh the net benefits of deforestation in the long-run. Although the economic case for conservation is clear, there remain many challenges in protecting the Leuser ecosystem in terms of providing incentives for local people not to pursue short term private gains from deforestation.

The table presents the estimated present values of ecosystem services over a 30-year period. The timing of the flow of benefits under each scenario is presented in the graph.

Conclusions: Costs & benefits

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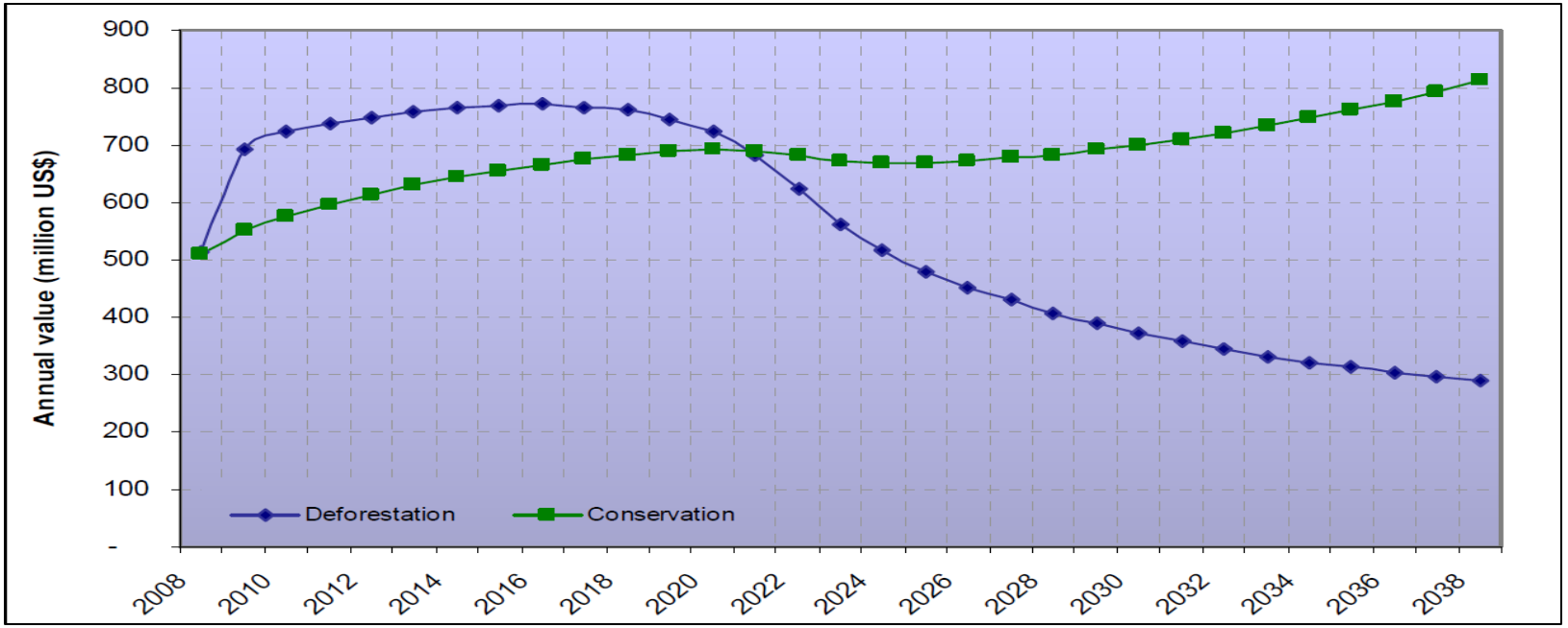
	Deforestation scenario	Conservation scenario	Additional benefit of conservation
Water supply	1,059	2,487	1,428
Fishery	2,025	2,490	465
Flood prevention	1,622	1,860	238
Agriculture	3,512	3,991	479
Hydro-electricity	15	26	11
Tourism	25	139	114
Biodiversity	103	582	479
Carbon sequestration	0	1,217	1,217
Fire prevention	183	225	42
Non-timber forest products	161	391	230
Timber	3,308	0	-3,308
Total	12,013	13,408	1,395



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