Eco Innovation Forum

The Economics of Ecosystems and Biodiversity

William Evison
Environmental Economist
PricewaterhouseCoopers LLP

25 November 2010

PRICEWATERHOUSECOOPERS

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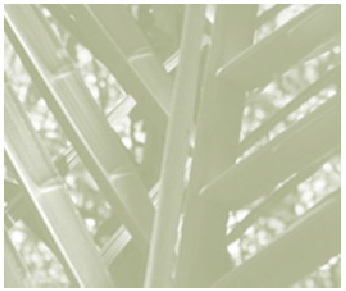

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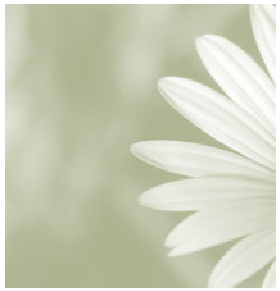

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Biodiversity	Variety within and between species, genes and ecosystems
Ecosystem	Dynamic complex of plants, animals and micro-organisms
Ecosystem services	Benefits for people and businesses from ecosystems. E.g. fresh water, timber, pollination, climate regulation, genetic resources, protection from natural hazards, recreation etc

More terms

Biodiversity	The natural world
Ecosystem	Nature
	Natural capital
Ecosystem services	Renewable natural resources

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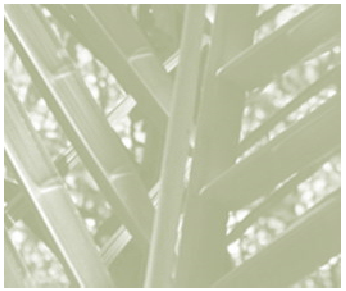

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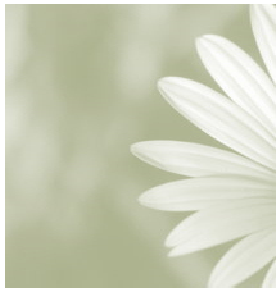

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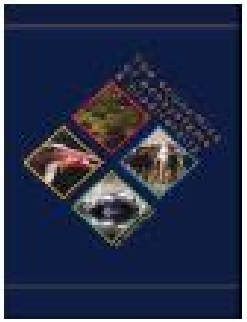
TEEB's evolution

G8 2007
Environment Ministers Meeting
Potsdam, 15-17 March 2007

Potsdam Initiative – Biological Diversity 2010"
.the economic significance of the global loss of biological diversity....



TEEB Interim Report
CBD COP-9, Bonn,
May 2008

TEEB Climate Issues
Update Strömstad,
September 2009

TEEB Main Reports
Nov 2009 –
Oct 2010

TEEB Synthesis
Nagoya,
October 2010

Source: adapted from Josh Bishop

TEEB - Goals

1. Demonstrate the value to the economy, to society/individuals and wider environment – what we have & what we risk losing.
2. Underline the urgency of action, benefits of action (opportunities), analyse costs of action
3. Show how the value of ecosystem services and biodiversity can be assessed and where it can be useful
4. Show how we (can) take into account the value of ecosystem services and biodiversity in our decisions and choices
5. Identify / support solutions
6. Address the needs of policy-makers, local administrators, business and citizens (the “end-users”)

Source: adapted from Pavan Sukhdev

Making Nature economically visible

- Ecological & Economic Foundations
- Options for National & Int'l. Policy-Makers
- Decision Support for Local and Regional Administrators
- Business Risks & Opportunities
- Synthesis

www.teebweb.org

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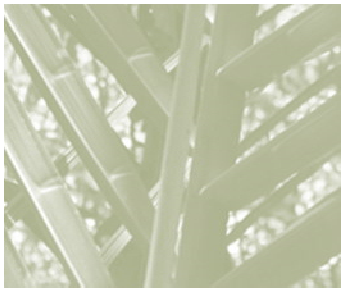

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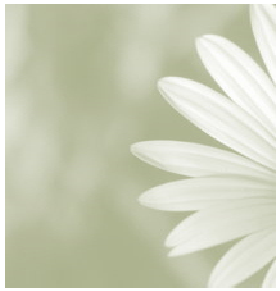

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Economic value at stake

Cost of climate change

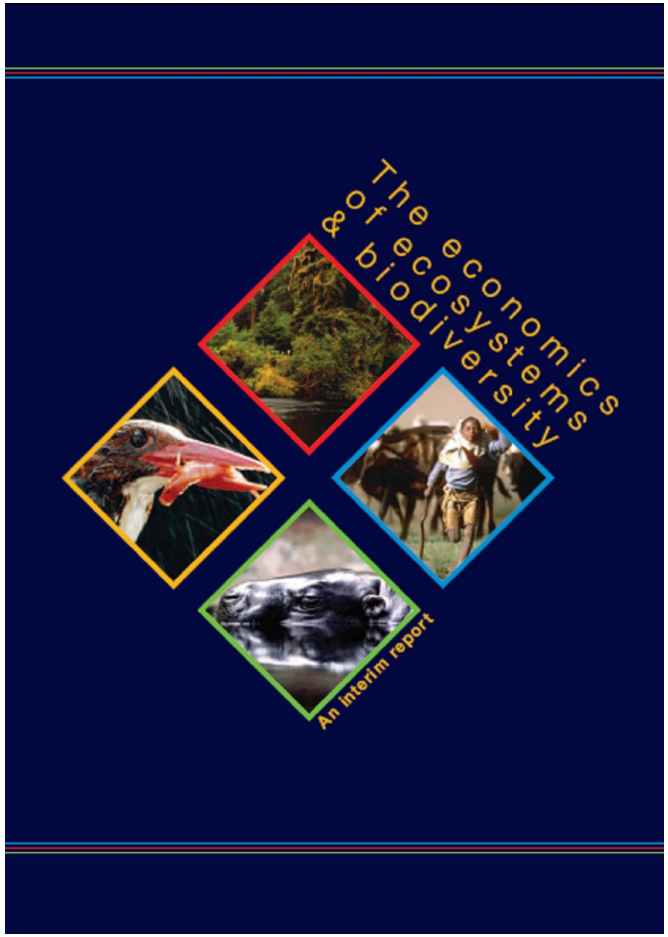
$1.7 trillion p/a

(2008 net greenhouse gas emissions,
Stern social cost of carbon $85 tonne CO_2e)

Cost of biodiversity loss and ecosystem degradation

$2 - $4.5 trillion p/a

(2008, The Economics of Ecosystems and Biodiversity, Cost of Policy Inaction report)



Big differences between climate change and biodiversity

Climate change	Biodiversity
Climate Change is a Global Public Bad	Biodiversity is a combination of three tiers of Public Good: Local, National, Global
Climate Change can be measured in terms of "CO_2 equivalent"	Biodiversity needs many different indicators – at least 20 indicators are being considered

Source: adapted from Pavan Sukdev

Multiple benefits from ecosystems

Provisioning services
- Food, fibre and fuel
- Water provision
- Genetic resources

Regulating Services
- Climate regulation
- Water and waste purification
- Air purification
- Erosion control
- Natural hazards mitigation
- Pollination
- Biological control

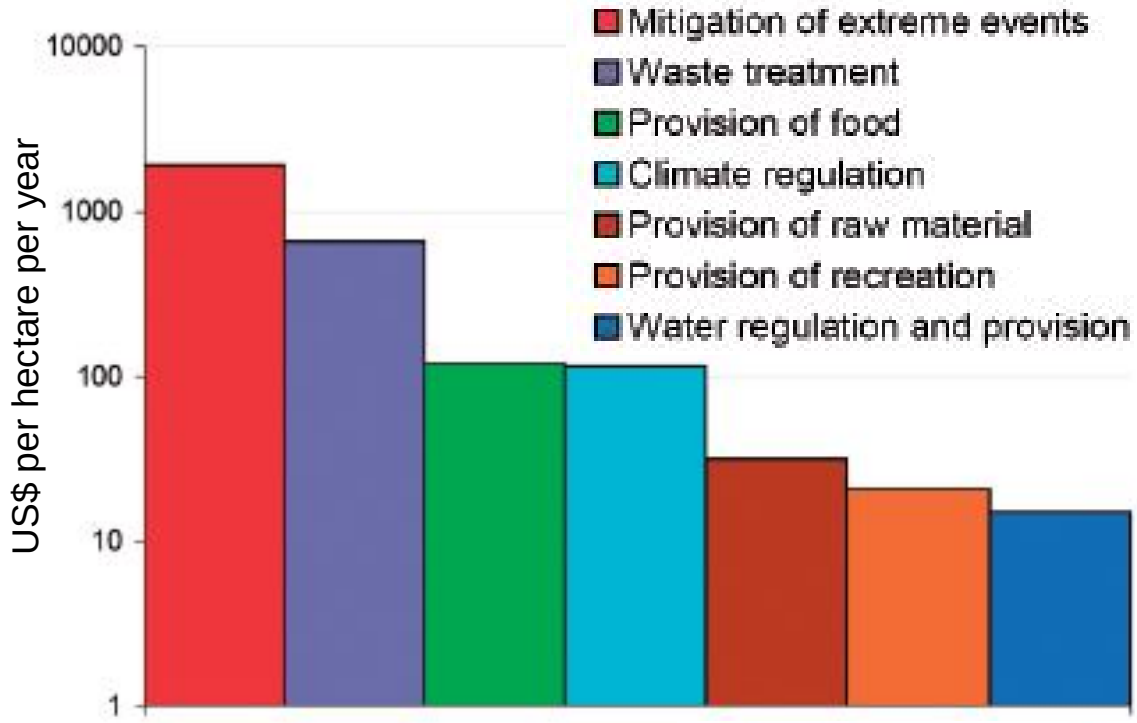
Cultural Services
- Aesthetics, recreation, tourism
- Cultural and inspirational services

Supporting Services
- *Soil formation*

+ Resilience: *eg to climate change*

Many services from the same resource:

Values of seven Ecosystem Services in Wetlands



Source: Emerton and Kekulandala 2003

Source: adapted from Patrick ten Brink

Limited awareness of ecosystem value

Provisioning services	
Food, fibre and fuel	Market values – known and generally taken into account in decision making
Water provision	
Genetic resources	Value historically overlooked (private sector exceptions)
Regulating Services	
Climate regulation	Value long ignored, now being understood
Water and waste purification	
Air purification	Value often overlooked
Erosion control	
Natural hazards mitigation	Value often appreciated only after service gone
Pollination	
Biological control	
Cultural Services	
Aesthetics, recreation, tourism	Sometimes value implicit in markets
Cultural and inspirational services	Values rarely calculated
Supporting Services	
Soil formation	
+ Resilience: *eg to climate change*	

Decision making is biased towards short term private benefits as the (long-term) value of ecosystem services is poorly understood.

Source: adapted from Patrick ten Brink

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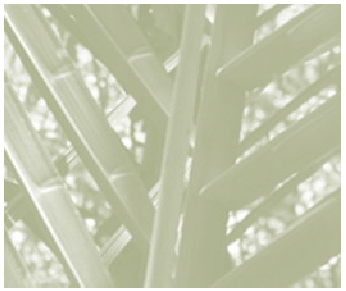

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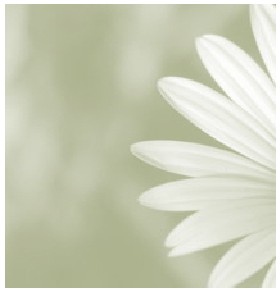

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TEEB for policy makers (Deliverable 1)

1. The global biodiversity crisis and related policy challenge
2. Framework and guiding principles for the policy response
3. Strengthening indicators and accounting systems for natural capital
4. Integrating ecosystem and biodiversity values into policy assessment
5. Rewarding benefits through payments and markets
6. Reforming subsidies
7. Addressing losses through regulation and pricing
8. Recognising the value of protected areas
9. Investing in ecological infrastructure
10. Responding to the value of nature

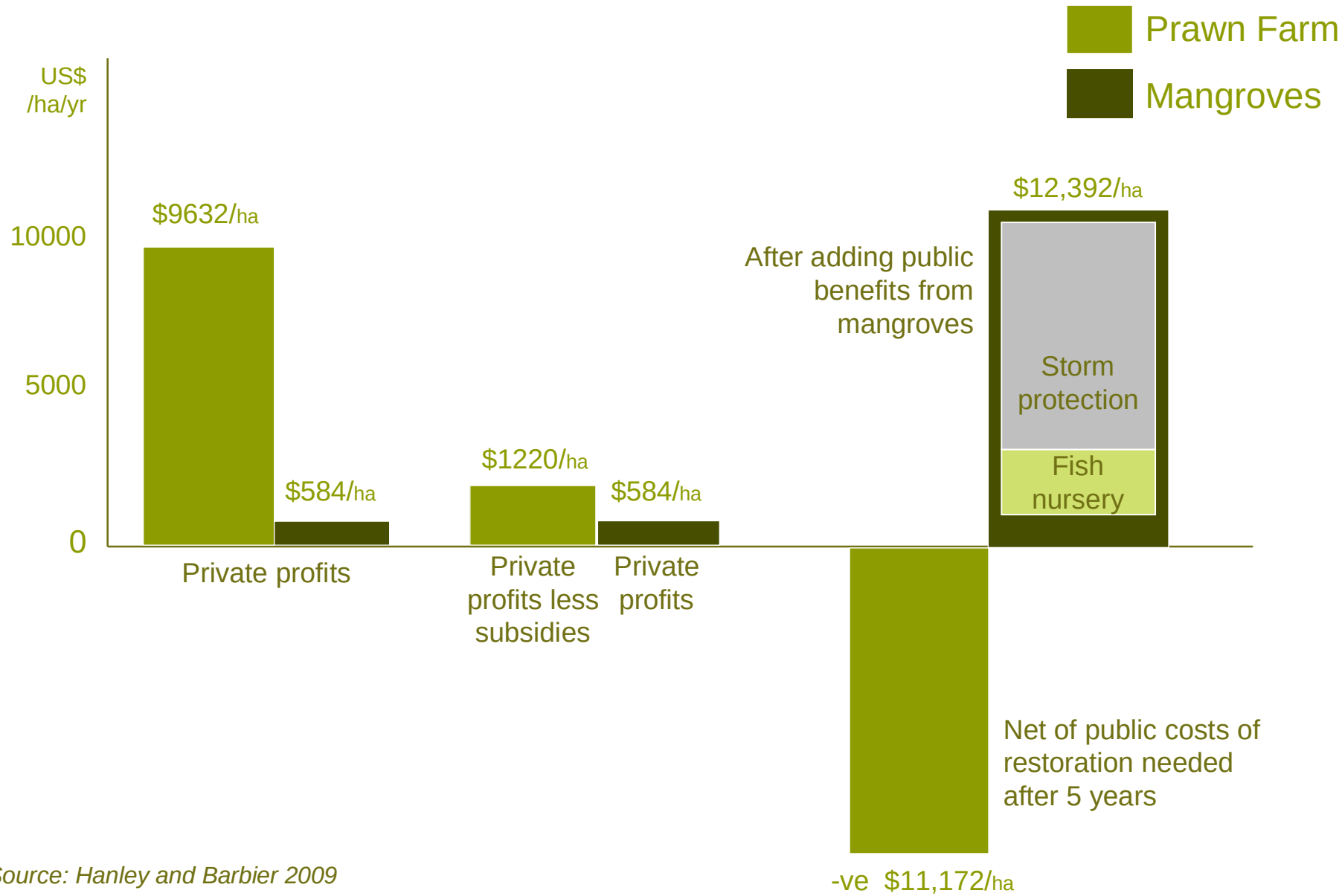
The value of protected areas

Annual global spending on protected areas:	$6billion
Annual need for effective protected area management:	$45billion
Annual funding gap:	$39billion

Annual benefits from effectively managed protected areas:	$4-5trillion
Return on investment ratio: (all: Balmford et al 2002)	1:100

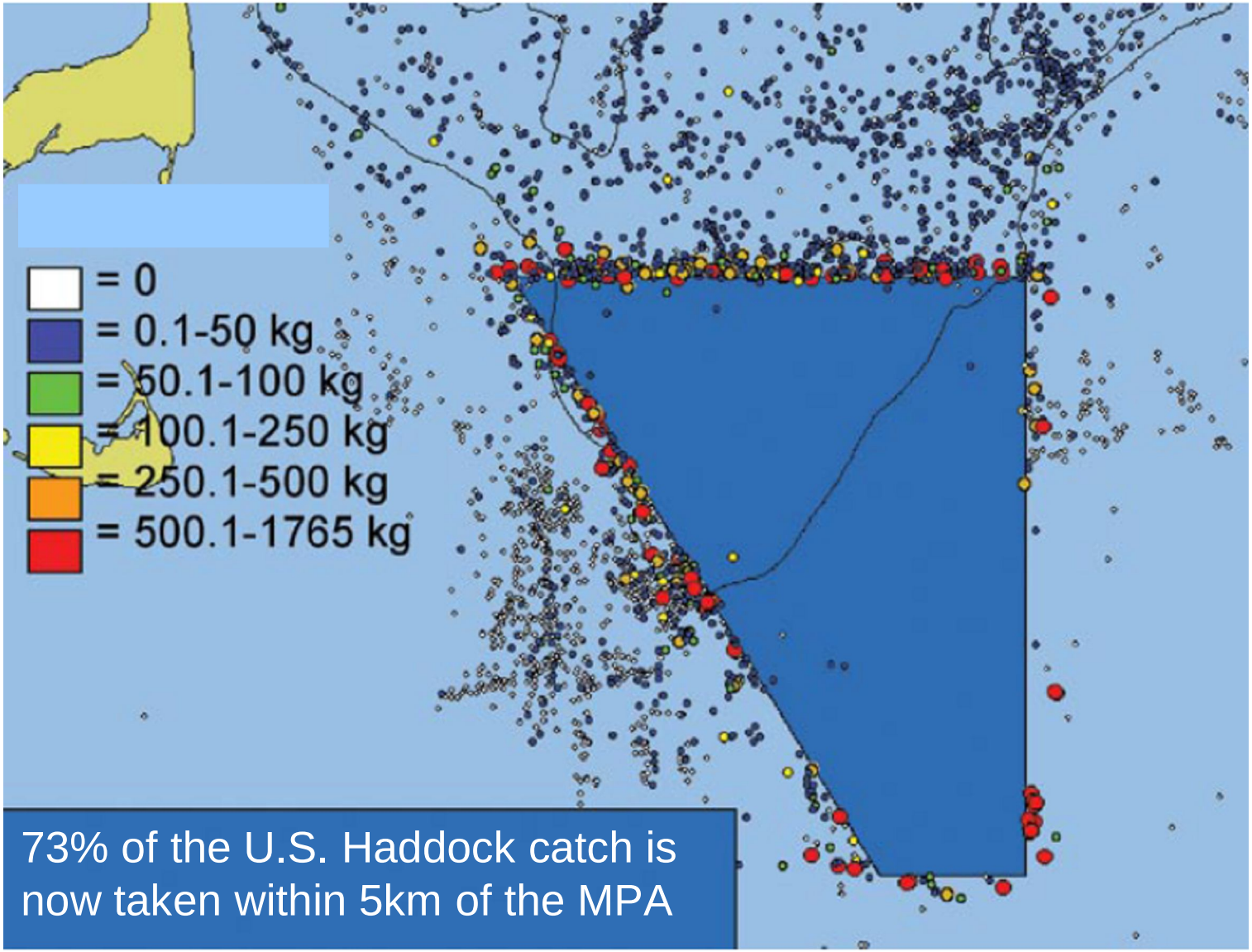
Annual subsidies for conventional agriculture: (OECD countries) (Myers 2001)	$360billion

Changing the basis of conversion decisions



Source: Hanley and Barbier 2009

Recognising the timescale of benefits



Source: Fogarty and Botsford 2007

A TEEB agenda for policy makers
Changing economic incentives

1. Subsidy reform (agriculture, fisheries, water, transport etc.)
2. Tax credits and other incentives for conservation
3. Certification and eco-labelling (voluntary / mandatory)
4. Payment for Ecosystem Services (national, international)
5. Environmental responsibility (EU Environmental Liability Directive, damage assessment and compensation)
6. Environmental trading schemes (REDD+, USA wetland and species mitigation, Australia biodiversity banking)
7. Public access to information (Global Reporting Initiative, Carbon / Forest / Water footprint disclosure projects)

Source: adapted from Josh Bishop

TEEB for National and International Policy Makers

TEEB for Policy Makers Coordinator: Patrick ten Brink (IEEP)

TEEB for Policy Makers Core Team: Meriem Bouamrane (UNESCO), Bernd Hansjürgens (UFZ), Katia Karousakis (OECD), Sylvia Kaplan (BMU-Germany), Marianne Kettunen (IEEP), Markus Lehmann (SCBD), Helen Mountford (OECD), Alice Ruhweza (Katoomba Group, Uganda), Mark Schauer (UNEP), Christoph Schröter-Schlaack (UFZ), Benjamin Simmons (UNEP), Alexandra Vakrou (European Commission), Stefan Van der Esch (VROM, the Netherlands), James Vause (Defra, UK), Madhu Verma (IIFM, India), Jean-Louis Weber (EEA), Stephen White (European Commission), Heidi Wittmer (UFZ)

Lead Authors (in alphabetical order): James Aronson, Sarat Babu Gidda, Samuela Bassi, Augustin Berghöfer, Joshua Bishop, James Blignaut, Aaron Bruner, Nicholas Conner, Nigel Dudley, Jamison Ervin, Sonja Gantioler, Haripriya Gundimeda, Bernd Hansjürgens, Celia Harvey, Katia Karousakis, Marianne Kettunen, Markus Lehmann, Anil Markandya, Andrew J McConville, Katherine McCoy, Kalemani Jo Mulongoy, Carsten Neßhöver, Paolo Nunes, Luis Pabon, Irene Ring, Alice Ruhweza, Christoph Schröter-Schlaack, Benjamin Simmons, Pavan Sukhdev, Mandar Trivedi, Patrick ten Brink, Graham Tucker, Stefan Van der Esch, Alexandra Vakrou, Madhu Verma, Jean-Louis Weber, Sheila Wertz-Kanounnikoff, Stephen White, Heidi Wittmer

Contributing Authors*: Jonathan Armstrong, David Baldock, Meriem Bouamrane, James Boyd, Ingo Bräuer, Stuart Chape, Florian Eppink, Pablo Gutman, Sarah Hodgkinson, Alexander Kenny, Pushpam Kumar, Sophie Kuppler, Indrani Lutchman, Paul Morling, Aude Neuville, Laura Onofri, Ece Ozdemiroglu, Rosimeiry Portela, Matt Rayment, Andrew Seidl, Clare Shine, Sue Stolton, Anja von Moltke, Kaavya Varma, Vera Weick, Sirini Withana

Editing and language check: Clare Shine

Acknowledgements for reviews and other inputs*: Camilla Adelle, Barbara Akwagyiram, Ali Al-Lami, Viviane André, Andreas Tveteraas, Sarah Andrews, Arild Angelsen, Jonathan Armstrong, Giles Atkinson, Tim Badman, Lina Barrera, Jonathan Baillie, Clabbers Bas, Basanglamao, Nicolas Bertrand, Katharine Bolt, Ivan Bond, Peter Bridgewater, Thomas Brooks, Theresa Buppert, Jonah Busch, Hannah Campbell, Cantwell Mark, Rebecca Chacka, Joana Chiavari, Bas Clabbers, Nicholas Conner, David Cooper, Tamsin Cooper, Anthony Cox, Chris Cox, Erica Dholoo, Barney Dickson, Deanna Donovan, Helen Dunn, Johannes Förster, Moustafa Mokhtar Fouda, Naoya Furuta, José Galindo, Raúl Garrido Vázquez, Stephanie Godliman, Rudolf de Groot, Clive George, Marcus Gilleard, Annelisa Grigg, Pablo Gutman, Mohamed AG Hamaty, Julian Harlow, Kaley Hart, García Carlos Hernán, Peter Hjerp, Robert Höft, Steve Hopper, David Huberman, James Jabenzi , Philip James, Doris Johnston, Mikkel Kallesoe, Ninan Karachepone, Jan Joost Kessler, Tim Killeen, Markus Knigge, Ulrich Kreidenweis, Wilfrid Legg, Chris Knight, David Koplow, Thomas Kretzschmar, Hugh Laxton, Wilfrid Legg, Dorit Lehr, Harold Levrel, Vivien Lo, Eimear Nic Lughadha, Indrani Lutchman, Wilma Lutsch, Els Martens, Jock Martin, Moses Masiga, Robin Miège, León Fernando Morales, Alastair Morrison, Helen Mountford, Bernie Napp, Michael Obersteiner, Karachepone Ninan, Alfred Oteng-Yeboah, Hylton Murray Philipson, Jerzy Pienkowsky, Rosimeiry Portela, Susan Preston, Valerie Preston, Ewald Rametsteiner, Matt Rayment, Jean-Pierre Revéret, Carmen Richerzhagen, Irene Ring, Carlos Manuel Rodríguez, Alan Ross, Manfred Rosenstock, Frederik Schutyser, Burkhard Schweppe-Kraft, Bambi Semrocs, Paul Shone, Stuart Simon, Monique Simmonds, Paul Smith, Nina Springer, James Spurgeon, Rania Spyropoulou, Ronald Steenblik, Andrew Stott, Claudia Dias Suarez, Rashid Sumaila, Leila Suvantola, Mahboobe Tohidi, Peter Torkler, Giuliana Torta, Jo Treweek, Francis Turkelboom, Dhar Uppeandra, Carolina Valsecchi, Koen Van den Bossche, Sander Van der Ploeg, Kaavya Varma, James Vause, Vaclav Vojtech, Raúl Garrido Vázquez, Francies Vorhies, Mathis Wackernagel, Francois Wakenhut, Matt Walpole, Emma Watkins, Frank Wätzold, Jaime Webbe, Grace Wong, Peter Wooders, Sven Wunder, Xin He, Carlos Eduardo Young, Olaf Zerbock, Oliver Zwirner & many others.

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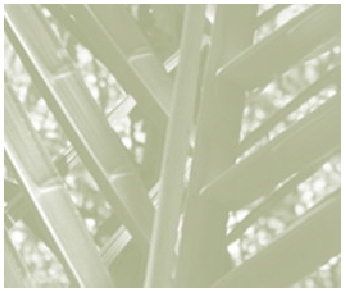

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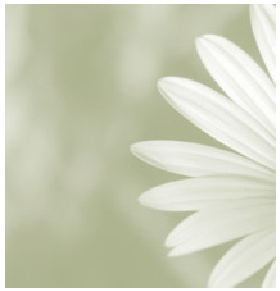

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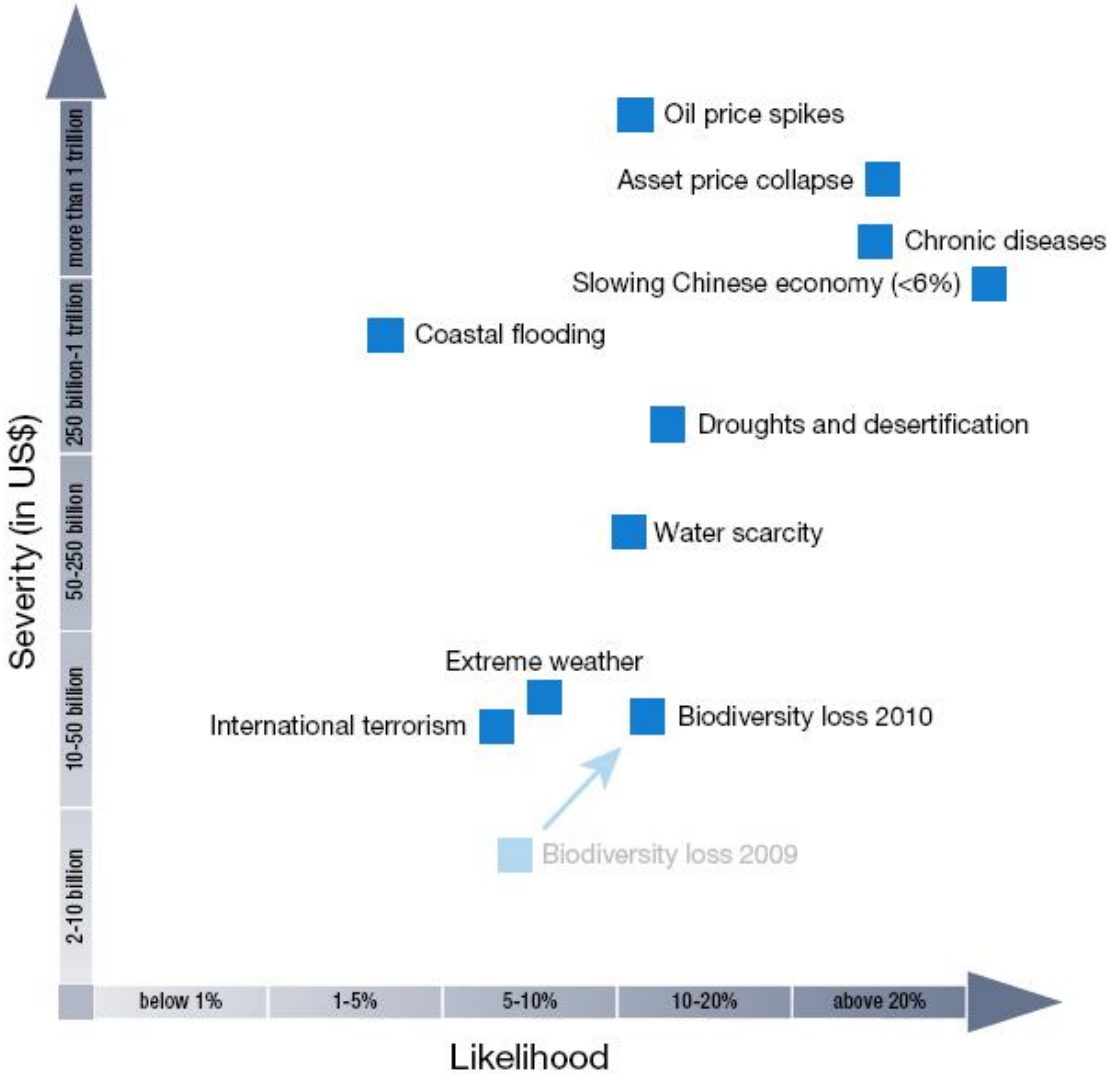
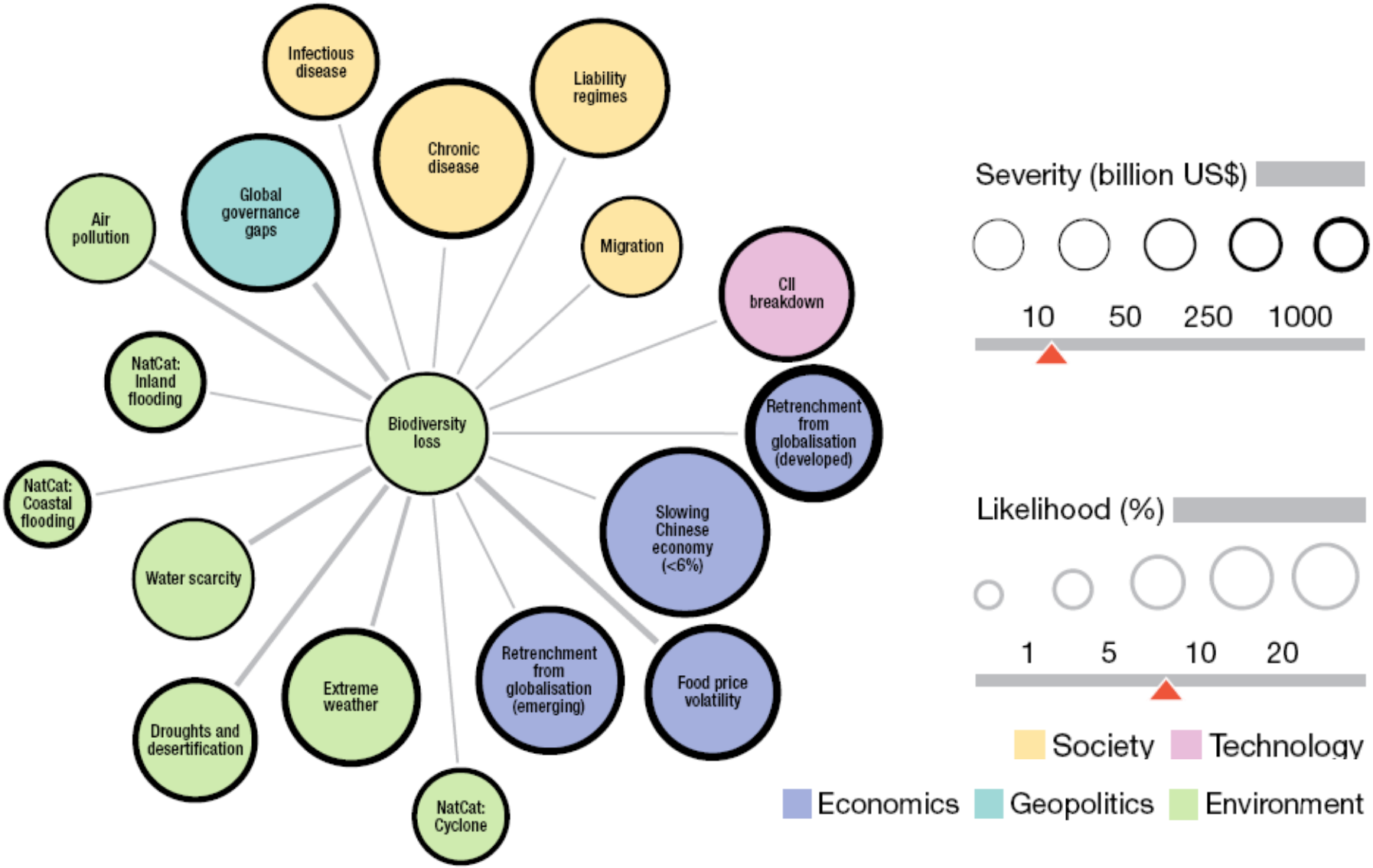
Biodiversity risk increasing in severity and likelihood



Source: World Economic Forum & PwC report, Biodiversity and Business Risk, 2010

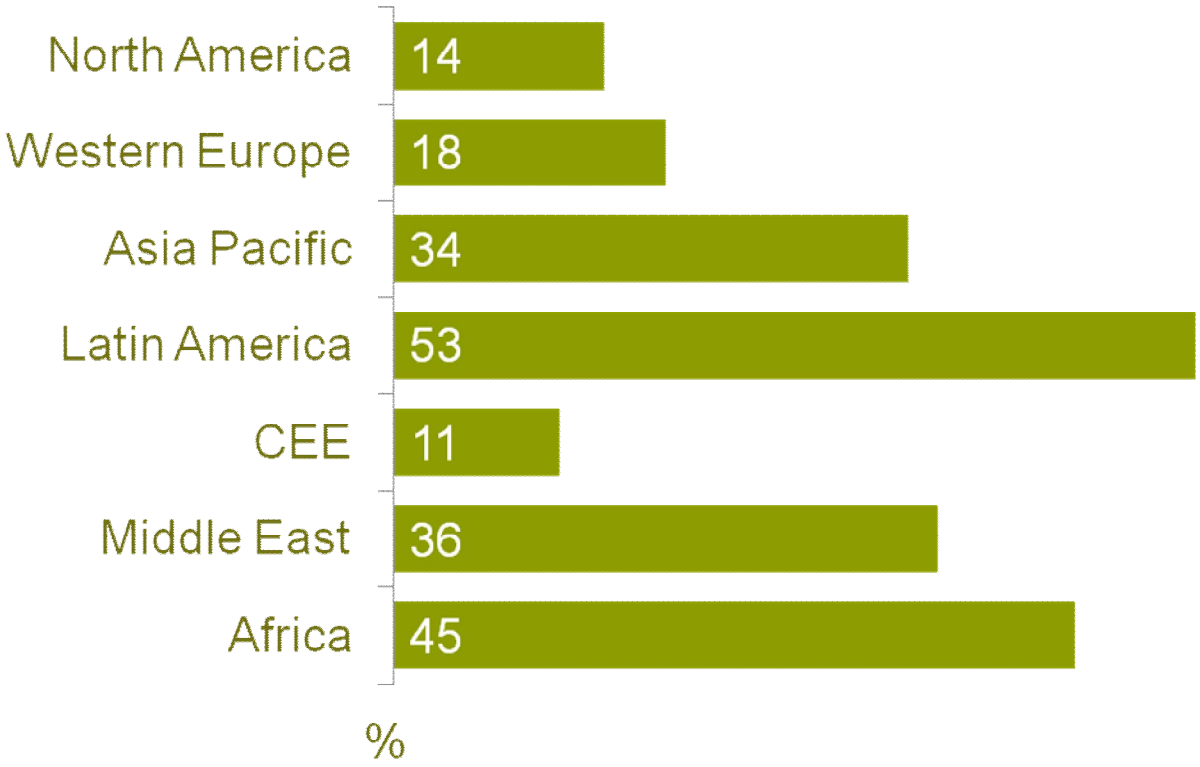
Biodiversity at the nexus of many risks



Source: World Economic Forum & PwC report, Biodiversity and Business Risk, 2010

1,200 Global CEOs on biodiversity risk

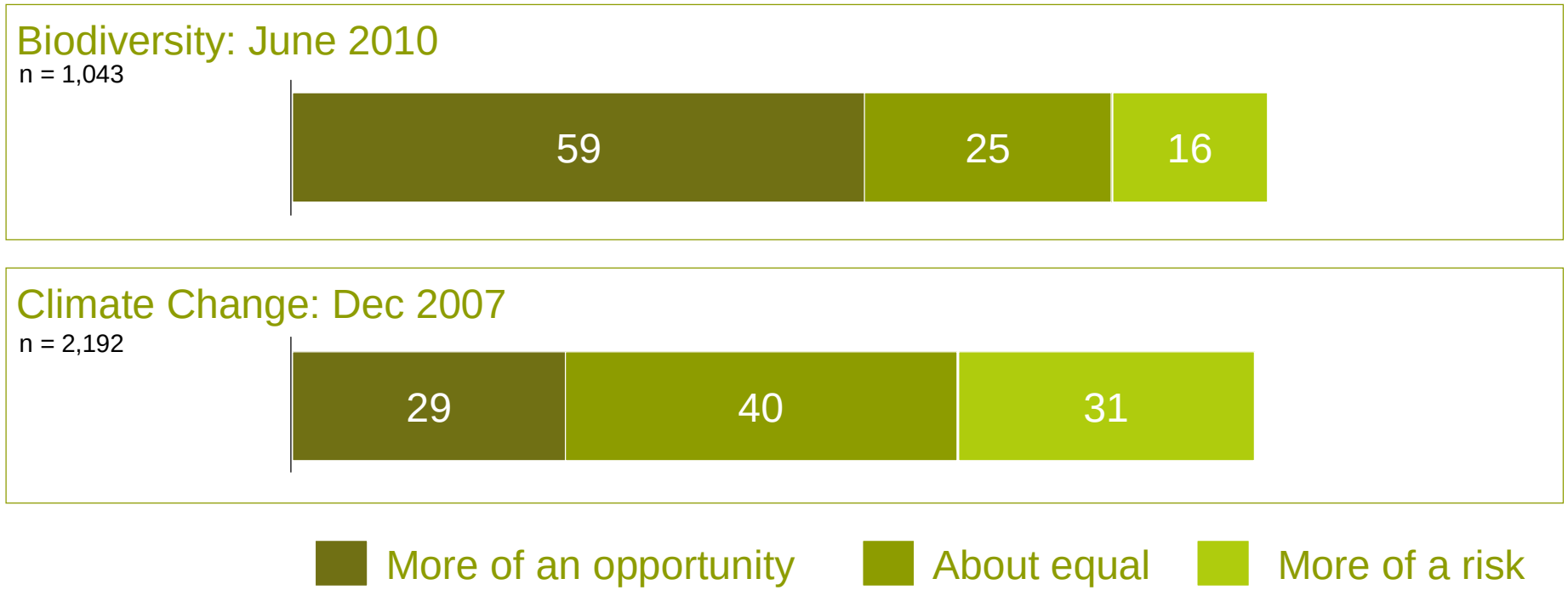
Respondents who were ‘extremely’ or ‘somewhat concerned’ about biodiversity loss as a threat to their business growth prospects



Source: PricewaterhouseCoopers 13th Annual Global CEO Survey 2010

But many also see opportunities

Do you see biodiversity on balance as more of an opportunity or more of a risk for your business?



Source: McKinsey & Company, The next environmental issue for business, 2010

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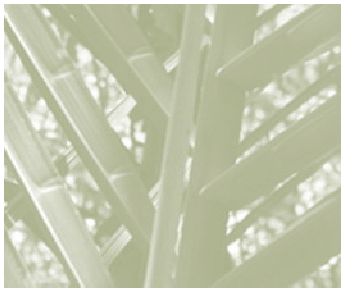

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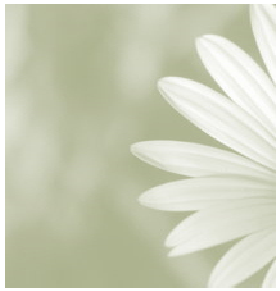

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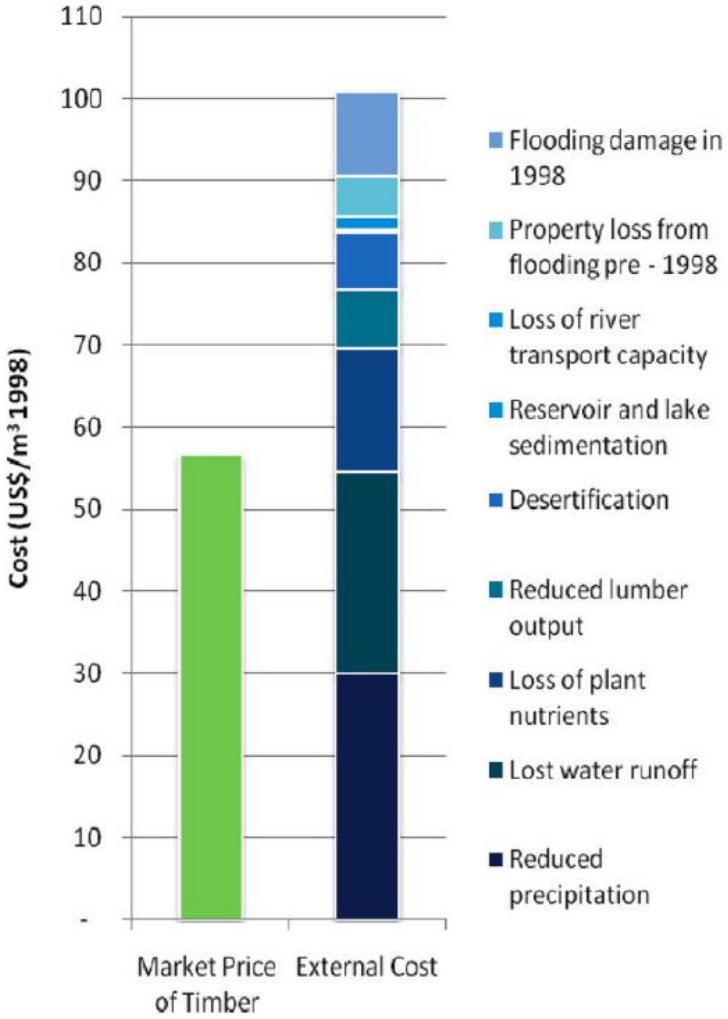
TEEB for business (Deliverable 3)

1. Business, biodiversity and ecosystem services
2. Business impacts & dependence on biodiversity and ecosystem services
3. Measuring & reporting biodiversity and ecosystem impacts & dependence
4. Scaling down biodiversity & ecosystem risks to business
5. Increasing biodiversity business opportunities
6. Business, biodiversity and sustainable development
7. A recipe for biodiversity and business growth

Understanding business impacts on ecosystems: Deforestation in China

Ecosystem service losses (1950-88)	**US$12.2 Bn**
Property loss from flooding	5.5%
Loss of river transport capacity	1.7%
Sedimentation of water bodies	0.3%
Desertification (crop yields)	7.7%
Reduced lumber output	7.9%
Loss of plant nutrients	16.7%
Reduced water runoff	27.2%
Reduced precipitation	33.0%



Source: Hongchang, W. (1997) and Trucost for TEEB 2010

Valuing business dependencies on ecosystems: Blueberries in Michigan

- Michigan Blueberry crop worth US$124 million/year
- 90% reliant on pollination by bees, at cost of US$ 1.5 million per year for managed hives, but threatened by collapse
- Operation Pollinator launched in 2009 in the USA and EU (13 countries)
- Restore native pollinators in agricultural landscapes by creating suitable habitat (field margins)
- Wild bees are natural ‘back-stop’ for managed hives

A TEEB agenda for business

1. Identify impacts and dependence on biodiversity and ecosystem services (BES)
2. Assess the business risks and opportunities associated with these impacts and dependencies
3. Develop BES information systems, set targets, measure and value performance, report results
4. Avoid, minimize and mitigate BES risks, using compensation (“offsets”) where appropriate, based on concept of Net Positive Impact
5. Grasp emerging BES business opportunities, e.g. cost-efficiencies, new products and new markets
6. Integrate BES actions with wider Corporate Social Responsibility
7. Engage with business peers and other stakeholders to improve BES guidance and policy

TEEB for Business

TEEB for Business Coordinator: Joshua Bishop (IUCN)

TEEB for Business Chapter Editors: Cornis van der Lugt (UNEP), Francis Vorhies (Earthmind), Linda Hwang (BSR), Mikkel Kallesoe (WBCSD), Nicolas Bertrand (UNEP), Sean Gilbert (GRI), William Evison (PricewaterhouseCoopers)

Contributing Authors: Alexandra Vakrou (European Commission), Alistair McVittie (Scottish Agricultural College), Annelisa Grigg (Global Balance), Bambi Semroc (Conservation International), Brooks Shaffer (Earthmind), Chris Knight (PricewaterhouseCoopers), Christoph Schröter-Schlaack (UFZ), Christopher Webb (PricewaterhouseCoopers), Conrad Savy (Conservation International), Cornelia Iliescu (UNEP), Eduardo Escobedo (UNCTAD), Emma Dunkin (UNEP), Fulai Sheng (UNEP), Gérard Bos (Holcim), Giulia Carbone (IUCN), Ilana Cohen (Earthmind), Ivo Mulder (UNEP Finance Initiative), James Spurgeon (Environmental Resources Management), Jas Ellis (PricewaterhouseCoopers), Jeff Peters (Syngenta), Jerome Payet (SETEMIP-Environnement), Jim Stephenson (PricewaterhouseCoopers), Joël Houdet (Oree), John Finisdore (World Resources Institute), Julie Gorte (Pax World), Kathleen Gardiner (Suncor Energy Inc.), Luke Brander (Institute for Environmental Studies, Vrije U.), Marcus Gilleard (Earthwatch Institute Europe), Mark Trevitt (Trucost plc), Michael Curran (Swiss Federal Institute of Technology, ETH Zurich), Naoya Furuta (IUCN), Nathalie Olsen (IUCN), Olivia White (PricewaterhouseCoopers), Peter Sutherland (GHD), Rashila Tong (Holcim), Robert Barrington (Transparency International UK), Roger Adams (Association of Chartered Certified Accountants), Scott Harrison (BC Hydro), Stefanie Hellweg (Swiss Federal Institute of Technology, ETH Zurich), Thomas Koellner (Bayreuth University), Wim Bartels (KPMG Sustainability)

Acknowledgements: Adam Klimkowski, Aditi Mehta, Alan Knight, Alistair Langer, Andrea Athanas, Andrea Debbane, Andreas Kontoleon, Andrew Deutsch, Andrew Mitchell, Andrew Seidl, Andy Mangan, Anida Haryatmo, Anislene Tavares, Anne-Marie Fleury, Annika Andersson, Anthony Simon, Ard Hordijk, Ashim Paun, Aude Neuville, Ayoko Kohno, Becca Madsen, Benjamin Simmons, Bernd Wilke, Bouwe Taverne, Brian Thomson, Britt Willskytt, Bruce Aylward, Carla Kleinjohann, Carsten Nessöver, Catherine Cassagne, Celia Harvey, Celine Tilly, Chris Perceval, Claus Conzelmann, Cristina Montenegro, Dale Squires, Daniel Skambracks, Daniele Perrot-Maître, Dave Richards, David Brand, David Bresch, David Huberman, Delia Shannon, Derek de la Harpe, Derek Eaton, Deric Quaile, Desiree Beeren, Dolf de Groot, Dominic Binefa, Dorothea Seebode, Edgar Endrukaitis, Edward Barbier, Elaine Dorward-King, Elizabeth Willetts, Eszter Kovács, Eva Mayerhof, Evelyn Ebert, Frank Hicks, Franz Gatzweiler, Franziska Staubli, Frauke Fischer, Garrette Clark, Geanne van Arkel, Gemma Holmes, Georgina Langdale, Gergana Petrova, Gijsbert Nollen, Giuseppe Zaccagnini, Hans Friederich, Harve Stoeck, Hazel Henderson, Heidi Wittmer, Helena Pavese, Herman Mulder, Ian Dickie, Ian Jameson, Irene Rankin, Jacques Weber, James Gifford, James Griffiths, James Vause, Jan Fehse, Jeff McNeely, Jeffrey Wielgus, Jennifer McLin, Jennifer Morris, Jim Cannon, Jo Treweek, John Brown, Jon Williams, Joseph Mariathasan, Josselyn Simpson, Juan Gonzalez-Valero, Juan Marco Alvarez, Jun Hangai, Jürg Busenhart, Kaori Fujita, Kaori Yasuda, Karin Skantze, Katrina Mullan, Kazuaki Takahashi, Kerstin Sobania, Kii Hiyashi, Kiyoshi Matsuda, Kurt Ramin, Laksmi Dhewanthi, Lara Barbier, Laura Somerville, Lloyd Timberlake, Lorena Jaramillo, Maia Ambegaokar, Marcos Vaz, Margaret Adey, Maria Ana Borges, Maria-Julia Oliva, Mark Day, Mark Weick, Mathieu Tolian, Matt Hale, Mira Inbar, Mohammad Rafiq, Monica Barcellos, Moustapha Kamal Gueye, Mubariq Ahmad, Nadine McCormick, Naoki Adachi, Naoko Souma, Narina Mnatsakanian, Nathaniel Carroll, Nicolas Kosoy, Nijma Khan, Nina Springer, Nobuo Nakanishi, Oliver Schelske, Olivier Vilaca, Paola Kistler, Paola Pedroni, Patrick ten Brink, Paul Armsworth, Paul Hohnen, Paul Sheldon, Paul Simpson, Paula Knight, Paula Loveday-Smith, Paulo A.L.D. Nunes, Per Sandberg, Peter Carter, Peter Gardiner, Polly Courtice, Pushpam Kumar, Ravi Sharma, Ricardo Bayon, Richard Mattison, Richard Spencer, Rik Kutsch Lojenga, Rob Regoort, Roberto Bossi, Ruth Romer, Ryo Kohsaka, S. Matsuura, Sachin Kapila, Sagarika Chatterjee, Salman Hussein, Sander vander Ploeg, Sandra Geisler, Sandra Paulsen, Sara Goulartt, Sheila Bonini, Simon Stuart, Sissel Waage, Sophie Dunkerley, Stefan Schaltegger, Stefanie Kaufmann, Steinar Eldoy, Steven Ripley, Stuart Anstee, Sue Both, Susan Steinhagen, Susanne Menzel, Takashi Hongo, Tetsu Hattori, Tilman Jaeger, Tim Nevard, Tim Ogier, Tim Smit, Toby Croucher, Tom Watson, Tomomi Takada, Tony Manwaring, Tsukasa Kanai, Uwe Beständig, Valerie David, Virpi Stucki, Wataru Suzuki, Wendy Proctor, Wiebke Herding, Yoko Otaki.

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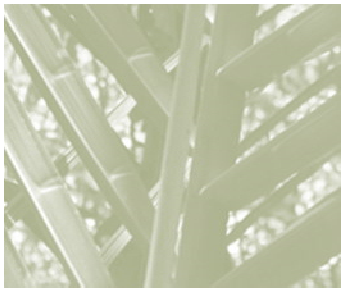

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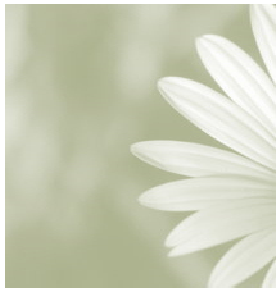


Recognising the value of nature

TEEB for policy makers

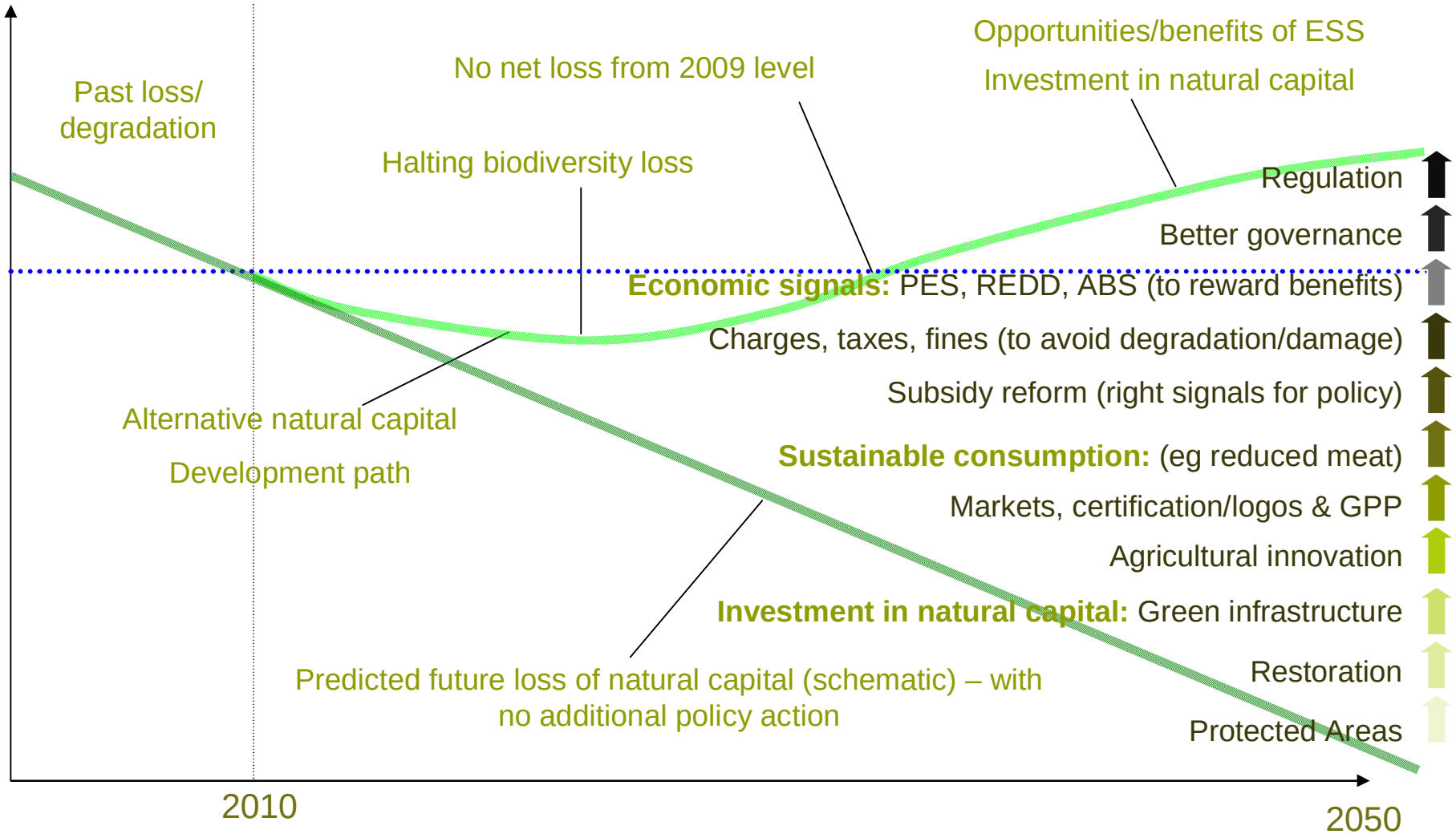
Growing business concern

TEEB for business

A new landscape for decisions

Q&A

Eroding natural capital base and tools for an alternative development path

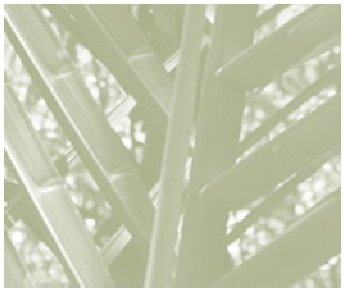


Source: adapted from Patrick ten Brink

What next for TEEB?

- TEEB Capacity Building for Developing Countries
- Regional and Sectoral TEEB Analyses
- Green National Accounts (Project w/ WB, UNEP & Others)
- Estimating Business Sector Externalities
- Identifying & Filling Ecological & Valuation Knowledge Gaps
- Communicating the Issue to Society at Large

Contents



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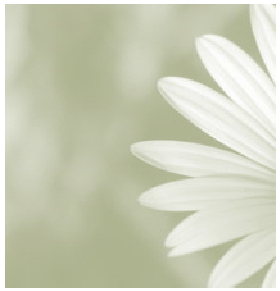

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defra

NORWEGIAN MINISTRY OF FOREIGN AFFAIRS

Rijksoverheid

Sida

TEEB for business

A new landscape for decisions

Q&A

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