



# Policy and Management Tools for Ecosystem Services

## Speaker

Pavan Sukhdev

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2011 ECOSYSTEM SERVICES SEMINAR SERIES

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# *Ecosystem Services Seminar 4: Policy and Management Tools for Ecosystem Services*

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## *Presentation and Discussion Notes From Speaker: Mr. Pavan Sukhdev*

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Seminar Series and Seminar 4 Goals:

*The goal of the multi-session seminar is to educate the broader conservation community including practitioners and funders on the diverse aspects of ecosystem services – such as how to account for ecosystem services and to effectively measure, manage, and communicate them.*


*Seminar 4 and associated readings focused on the following goals:*

- *Existing tools for implementation*
- *Role and limitations of science in advancing ecosystem services, including data integration and translation to policymakers*
- *Ecosystem services and management planning*
- *Monitoring ecosystem services*
- *Role of collaboration (government, non-profit, and private)*
- *Successes/Failures*

*This document is a product of the Gordon and Betty Moore Foundation's Ecosystem Services Seminar Series that took place between March and November 2011. For more information please visit [www.moore.org](http://www.moore.org) or request "ES Course Info" from Heather Wright at [info@moore.org](mailto:info@moore.org).*

Disclaimer:

*This document is a summary that includes PowerPoint slides from the speaker, Mr. Pavan Sukhdev, and notes of his talking points. In addition, we provide a synthesis of important questions discussed during Seminar 4. Please keep in the mind that the following document is only a recap of Mr. Sukhdev's presentation and Blue Earth Consultants' notetakers have, to the best of their ability, captured the speaker's presentation. We hope that the following presentation and discussion notes will be used as resource to advance further discussions about ecosystem services.*



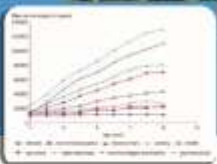
# Role of Ecosystem Services in Advancing Environmental Conservation and Human Wellbeing: Links to Policy and Management?


**Pavan Sukhdev**  
McCluskey Fellow 2011, Yale University  
Founder-CEO, GIST Advisory

Monograph 1


The Value of Timber, Carbon, Fuelwood, and Non-Timber Forest Products in India's Forests

Accounting for Freshwater Quality in India

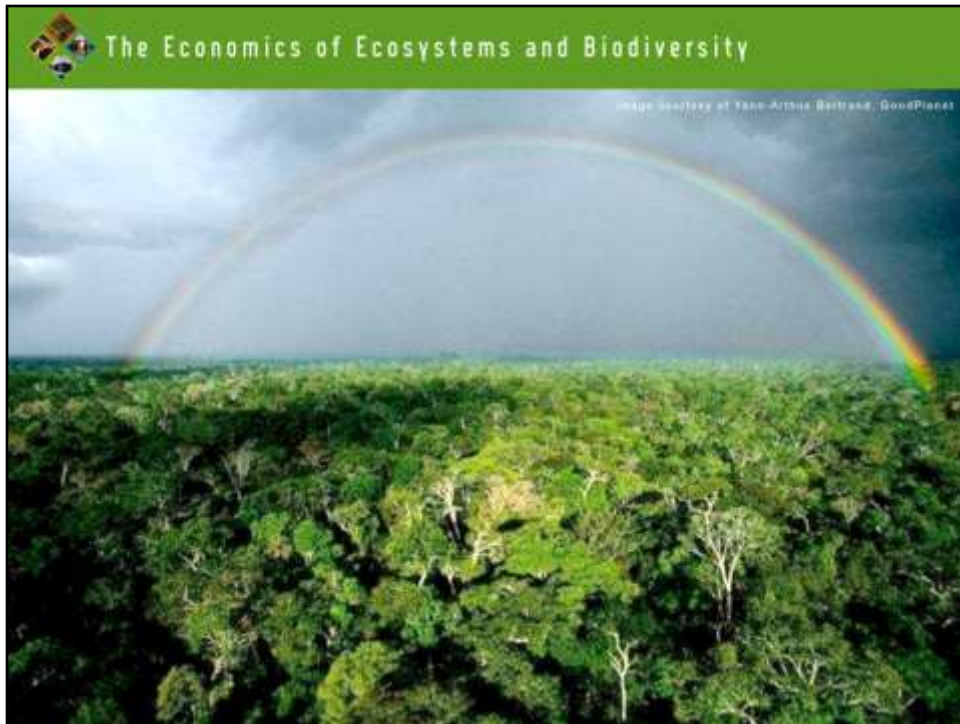




Green Initiatives for a Smart Tomorrow





Adapted from Green Initiatives for a Smart Tomorrow



- There is economic invisibility when it comes to nature. We do not recognize nature's value because it is a public good.
- When people think about the Amazon Rainforest, they think about its carbon and biodiversity values. Few think about its ability to supply fresh water (the Amazon is responsible for more than 20% of global river discharge).

## Tropical Forests provide significant “Climate Change Mitigation Services” .....

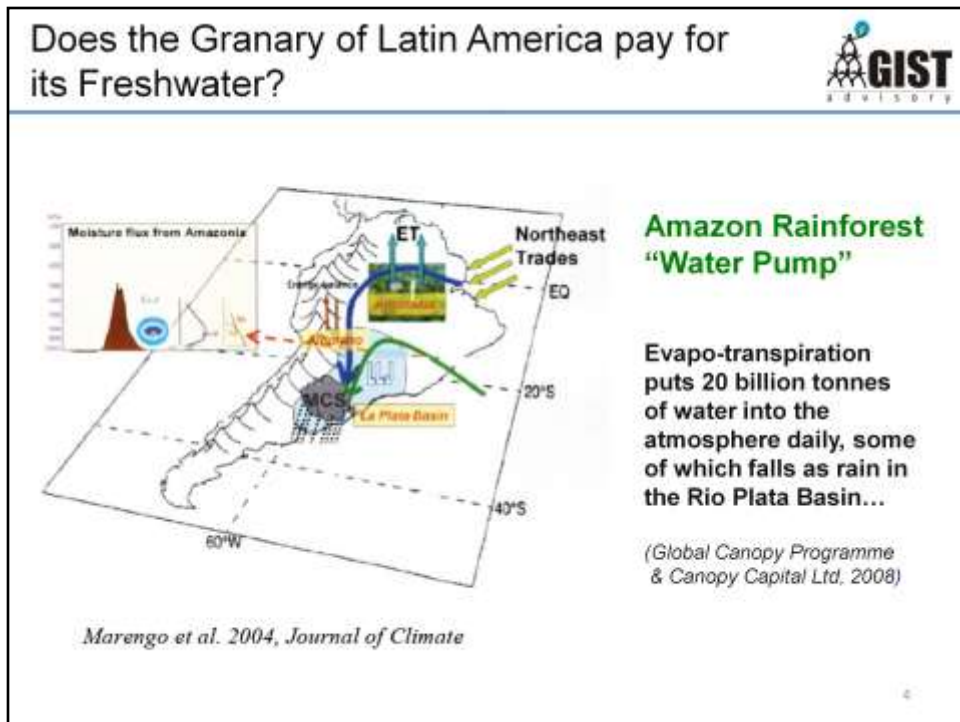


- ***Tropical forests store a fourth of all terrestrial carbon***
  - 547 gigatonnes (Gt) out 2,052 Gt (Trummer et al, 2009)
- ***Tropical forest capture***
  - up to 4.8 Gt CO<sub>2</sub> annually (Lewis & White 2009)  
(total emissions p.a. ~32Gt)
- ***Stopping deforestation holds an excellent cost-benefit ratio***
  - Halving deforestation generates net benefits of about \$ 3.7 trillion (NPV) counting only the avoided damage costs of climate change (Eliasch Review 2008)

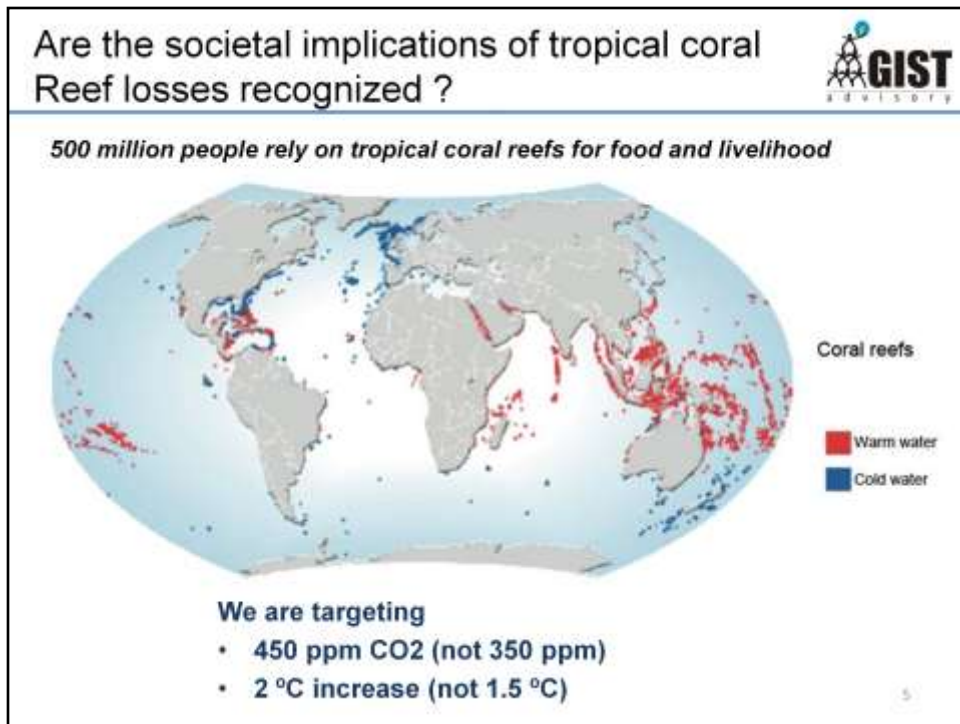
***... Have Tropical Forest owners and custodians been paid for these services ?***

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- The Amazon contributes to the carbon cycle and captures carbon (the Amazon captures roughly 15% of emissions).
- Numerous studies explain the economic benefits of reducing deforestation of the Amazon, but few account for the water losses associated with deforestation.



- Even our estimates were not good enough. The image depicts the Amazon Rainforest “water pump,” which the Global Canopy Programme and Canopy Capital estimate returns 20 billion tons of water into the atmosphere each day. This picture symbolizes the important message that needs to be conveyed to the public. We all learned about the water cycle in school, but making the connection to geography is also important.
- NASA satellite imagery shows both the freshwater flows and the massive accumulation of water around the Amazon region. This is the science, but I have yet to see it depicted and translated into applicable education formats. It is challenging to build curricula around the nitrogen, carbon, and water cycles.
- The most important resource is water; however, it is another economically invisible part of nature. For example, the Amazonian economy is estimated around \$2 trillion for land-based biomass, while few hands exchange money based on water.

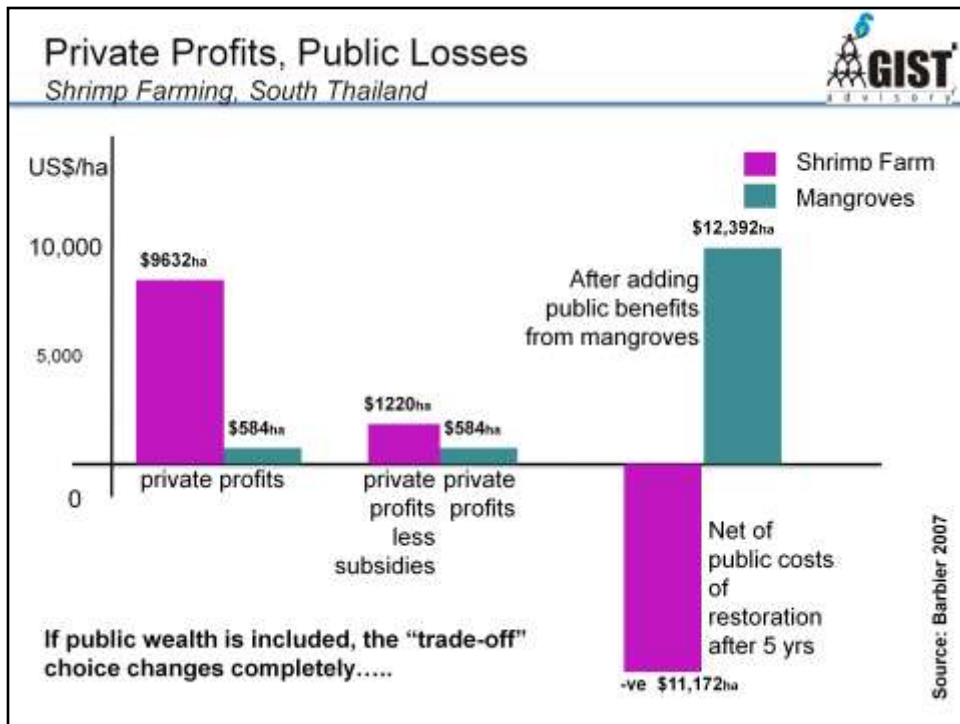


- Another side to economic invisibility has to do with the poor and their relationship to nature.
  - How do we manage the risk to the poor associated with losing nature?
- Coral reefs demonstrate this issue well. We have witnessed huge coral bleaching events and the rate of loss is likely to increase. The health of our coral reefs is a biodiversity issue, but it is also a people issue. These reefs provide employment for many people around the world and provide food for half a billion people or about 8% of the world's population.
  - How do we manage the risk of losing all coral reefs in the world?
  - How do we respond to this loss?
  - How do we help?
- As a society, we seem to have made a choice to kiss coral reefs goodbye, either knowingly or unknowingly.
  - For reefs to recover, emissions need to fall below 350 ppm, but we have set a target well above that.
- That is the biological story, behind which there is a deeper story.
  - Who is going to deal with the jobs and livelihoods of the people who depend on the coral reefs? Remember, we are talking about 8% of the

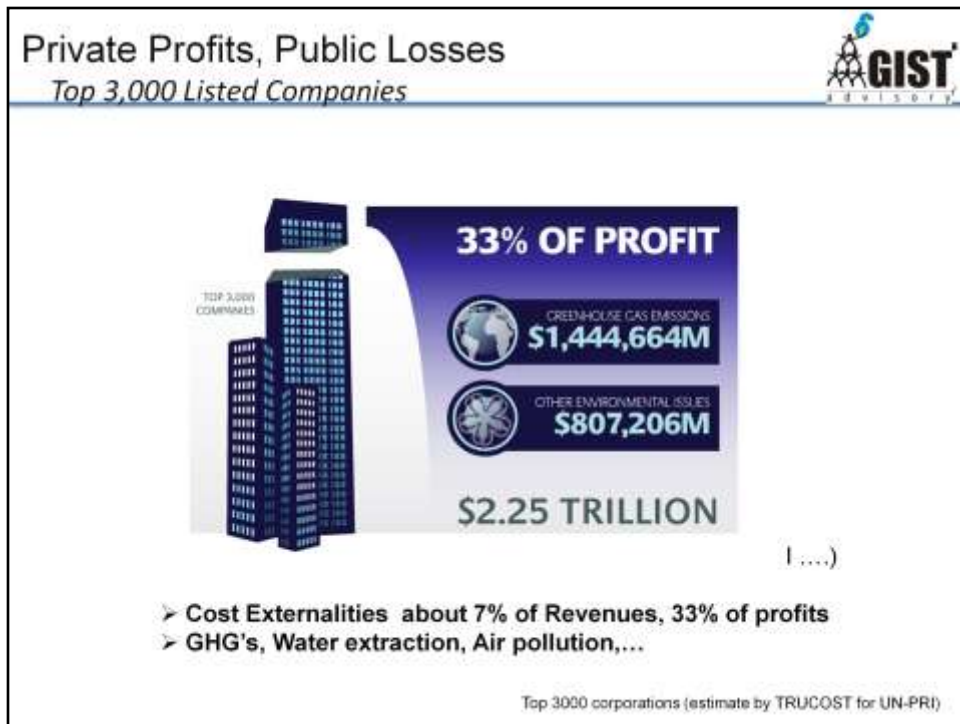
world's population.

- The image depicted on the slide shows the distribution of coral reefs around the world. The red dots represent warm corals. You will notice that the locations of warm corals coincide with the global poverty belt. The solution cannot be to move people. The Philippines estimate 25 million people are at risk from declining coral reefs. You cannot recreate jobs in this type of situation; you cannot just move 25 million people inland. They have established lives in these areas and there is nowhere for them to go.
- We need to have a better understanding and appreciation of the natural and human impacts of this loss. We need to understand the poverty dimension. We, in the developed world, will feel the effects to some extent, but not nearly as much as those who live in these places. We will still be able to get fish, maybe not the same kind of fish, but we will get it. For the people who live in these areas, the reef is the lifeblood of the community.

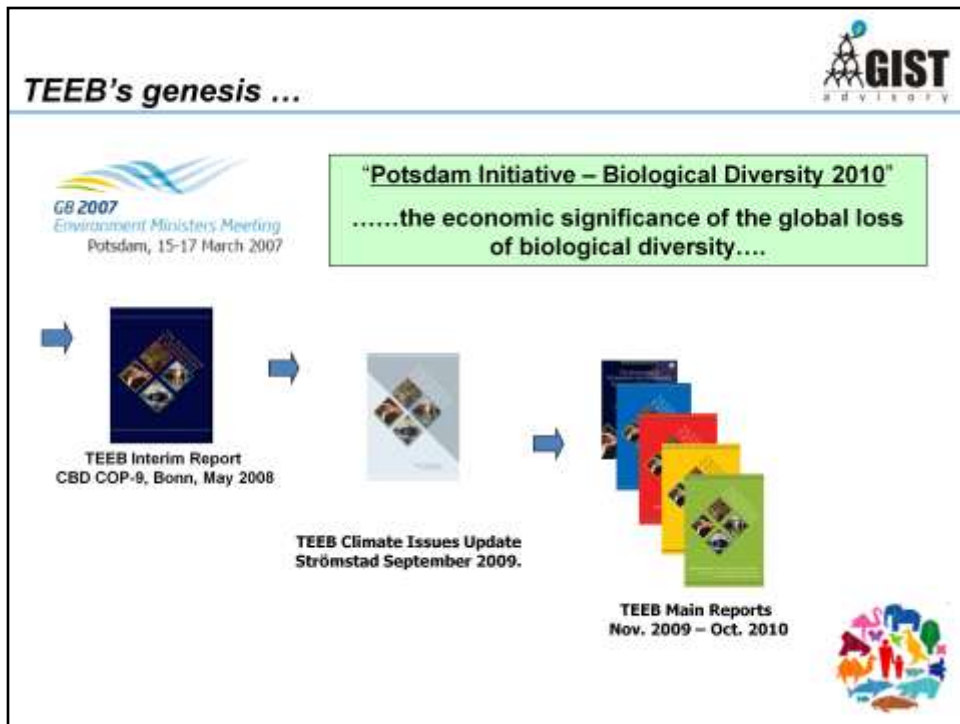




- Again, the economics of this is an untold story.
- A study conducted in Thailand in 2001 and 2007 observed a loss of mangrove forest due to the conversion of mangroves to shrimp aquaculture. This conversion has a huge economic discrepancy. Without subsidies, the conversion of mangroves to shrimp aquaculture is far less attractive; the economic advantage is slight.
- When you start accounting for the ecosystem services (ES) on both sides, the benefits change. During the land conversion, you lose fertility of the land and after a few years, you no longer can have an aquaculture operation. Mangroves also provide additional benefits to local villages such as storm and surge protection and they act as fish nurseries. You wind up with a completely different tradeoff diagram when you include these public wealth factors.
- This represents an important third aspect – private profits direct shrimp farming not public wealth.



- The previous story about shrimp farming in Thailand is not unique. All over the world, private profits win over public profits.
- A True Cost study examined a database of 3,000 companies. The cost of all 3,000 continuing with “business as usual” practices was estimated at \$2.2 trillion. The cost of their externalities only represents 33% of their profits. The value they are adding to society may be less than the value of their externalities.
- By the way, none of this is illegal; this is just the way things happen.






- The True Cost study and the TEEB project set the backdrop for the G8 question, "Can we make an economic argument in favor of biodiversity conservation?"
  - The answer is that we can, it is just a lot more difficult.
- Biodiversity is complex and changing; it is the living fabric of the planet. We can have a loss at a local scale and yet have a gain at a global scale. There is no such thing as a "percent equivalent." If a species is lost, you cannot just replace with an equivalent, because one does not exist. Everything is location specific.
- As a banker, I received an email asking me to lead the TEEB project. I volunteered carefully. I said I would help with the interim report. I was used to short timeframes; the report took three months to write and everyone appreciated it and liked it.
- Then the real work began. I told them that if they were serious about this project, they would need to write to suggest solutions not to discover the problem. Since solutions vary spatially and are audience-specific, there was no point in writing one massive tome. Writing an over generalized resource would not have been helpful; no one would have read it. In response, I proposed writing multiple audience-specific reports.
- The success of the TEEB reports is directly related to the community who helped create them. There was a collective idea that economic invisibility was a problem and that it needed to be addressed. The TEEB team understood that it needed a community and that no single group had all of the answers. Many people came to

work on TEEB, which was crucial to its success. We estimate that 550 people either wrote or reviewed the reports. In addition, there were thousands of people behind those 550 who contributed. The takeaway is that TEEB was a massive community effort.

- Frankly, TEEB received \$4.5 million funding because it was a wide reaching community effort. In-kind contributions from the community putting in free time likely equal another \$3.5 million

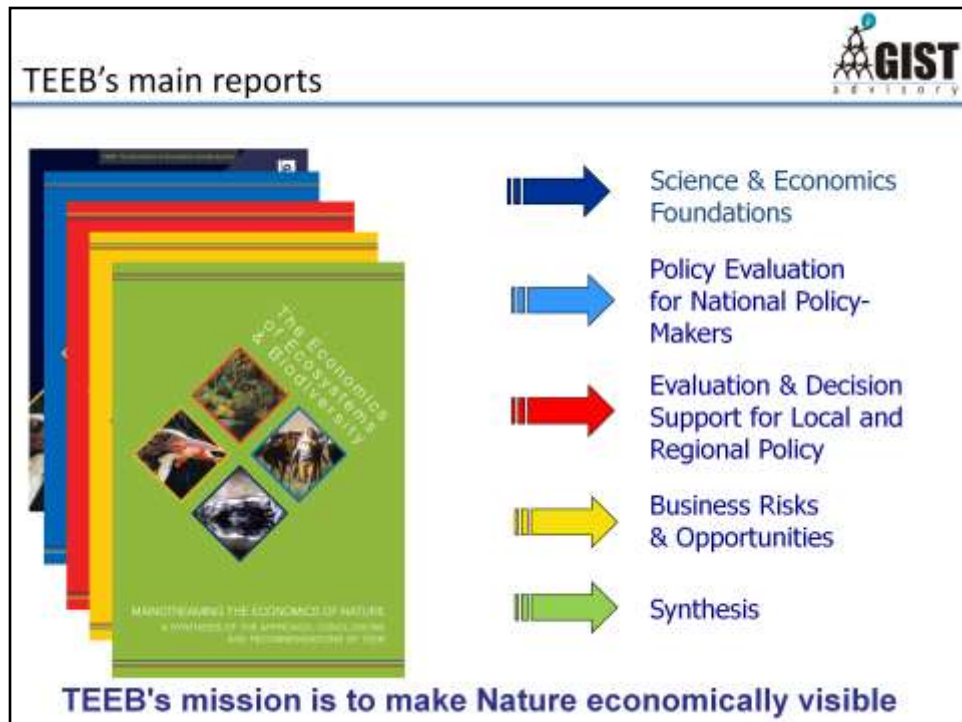
## The TEEB Community...




- TEEB Funders and Advisory Board ...
- UNEP ... hosting TEEB 
- TEEB Scientific Coordination Team at UFZ 
- over **500** contributors across partner institutions, universities, individuals...
  - an international and diverse "Community" of economists, ecologists, practitioners ...
  - sharing best practices, tools, methods and experience
  - and making TEEB a "Global Public Good"

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- The other key factor in TEEB's success was the high caliber advisory board. We selected representatives who were well known or experts in their respective fields. We chose the heads from groups like UNEP and IUCN. We selected people at the center like David Pierce and Walt Reid. We needed to preserve the connection to the Millennium Ecosystem Assessment (MEA). Despite feeling uncomfortable with the way ES are categorized in the MEA, we wanted to keep that connection.
- Finally, the community had a shared vision, which drove our success. One thing I learned from the entire TEEB process is that a community with a shared vision can accomplish a lot.
- Some of you were at the Consultative Group on Biologic Diversity (CGBD) Montana meeting a few weeks ago, where a great question was posed about what to fund. My response is that funders should look for projects guided by or working with a community united by a shared vision. Those projects will have the most success.



- There are five different reports, the last of which is a synthesis.



## Key Recommendations of TEEB

- **System of National Accounts ...**  
Upgrade the SNA to include changes in Natural Capital. Start with physical accounts for forest stocks & carbon storage (>> REDD+ ... Urgent)
- **Business...**  
Standardize, measure, disclose, all major "nature" externalities in statutory annual reports
- **Subsidies....**  
Measure & annually disclose environmentally harmful subsidies, manage them down, phase them out
- **Ecological Infrastructure ...**  
Evaluate & invest in ecosystem conservation / restoration - for freshwater, soil, Mitigation ("Making REDD+ Real") & adaptation ("Climate Issues Update")
- **Local and Regional Govt ... 5 Main Strategies**  
Build ecosystem service values into Regional Land Plans, Protected Area Budgeting, Eco-Certification, PES...

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- Within the TEEB reports, there are many recommendations. I have listed a few of my favorites on this slide.

### National Accounting

- I hope we will touch on this topic in our discussion. It is important because if whatever you are doing does not resonate at the national level, it will fall flat. We need new national accounting system; ES are largely public goods and almost entirely absent from our national accounting schemes.
- Unfortunately for us, natural capital is largely not reflected in national accounts; the losses are huge, but they are not reflected. Private values are captured but public wealth is omitted. GDP does not reflect future incomes, does not reflect ES, and it does not reflect the value of nature. This is a mistake, there is no doubt. Many economists recognize the problem, but no one wants to do anything about it and that has been the problem.
- This challenge will be broken when we work together. The Wealth Accounting and Valuation of Ecosystem Services (WAVES) project is getting up to speed and it is starting to work on this. I hope it succeeds.

### Business Side

- The most important need for business is the need to start measuring and disclose externalities in annual reporting. Need a stated method to ensure there is no arbitrage or green washing. As long as companies continue to use and represent

themselves with incomplete balance sheets, they will have no incentives to change their ways.

- Once someone asked me if I knew which palm oil business had a worse impact on Indonesia. I responded saying I had no clue because neither one discloses how much unsustainable palm oil they purchase or where they purchase it from. There is no connection between palm oil and unsustainable deforestation, because the accounting is incomplete. Today we have metrics and accounting is underway.
- We have some information on China's construction, apparel, shoes, and cotton sectors; however, it is still patchy and it needs to happen more often.
- There should be an accounting standard, but the problem is getting the accounting bodies to measure and disclose the externalities. When investors pick up a balance sheet, just as they see disclosure regarding directors' bonuses, the impacts on nature and society, both positive and negative, should be disclosed.

### Subsidies

- I am neither the first nor last to say this. We have \$650 billion going to oil subsidies and we have \$275 billion going to agriculture subsidies. You cannot exclude this; it must be included in the accounting.
- Furthermore, we cannot solve tomorrow's problems with yesterday's solutions. Today, we have enough fossil fuel, we do not need more incentives to go and discover it. I do not have anything against subsidies; they can be good government interventions, but our subsidies today are spending money on yesterday's problems and not those of tomorrow.

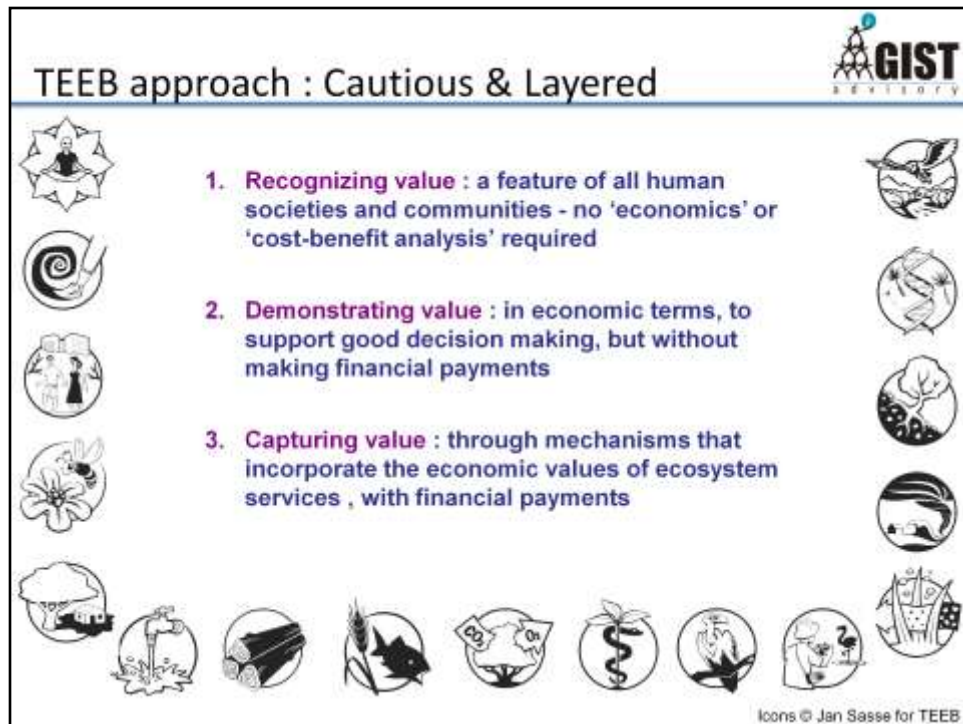
### Ecological Infrastructure

- At the Conference of the Parties (COP) 15 in Copenhagen, we talked a lot about social return on investment. Unfortunately, COP 15 was a wash out; I am hoping the work will continue forward at the Society for Ecological Restoration Conference in Mexico this August. Investment is important.

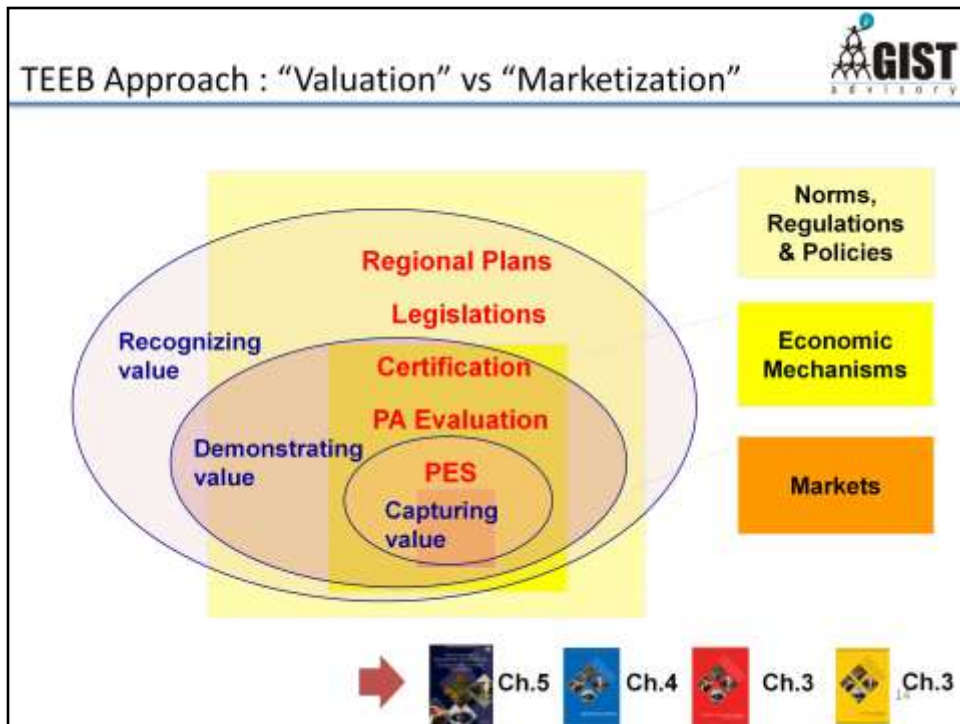
### Local and Regional

- There is not one best answer; a lot depends on building solutions for the situation at hand. It depends on the context (policy or business) because each demands a different strategy. Through TEEB, we broadly talk about five approaches.

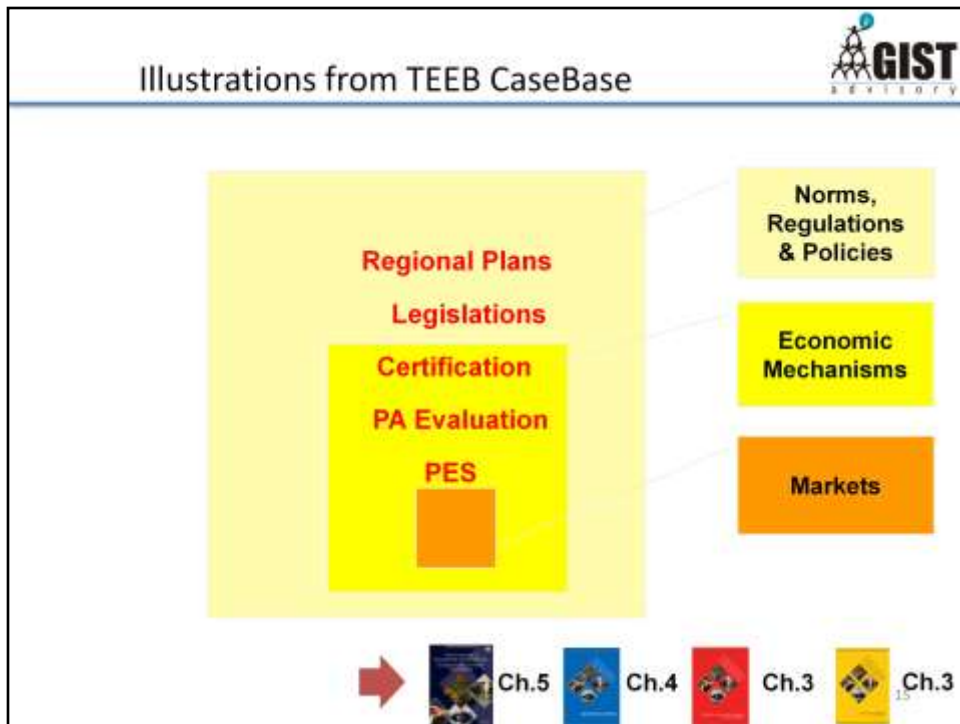




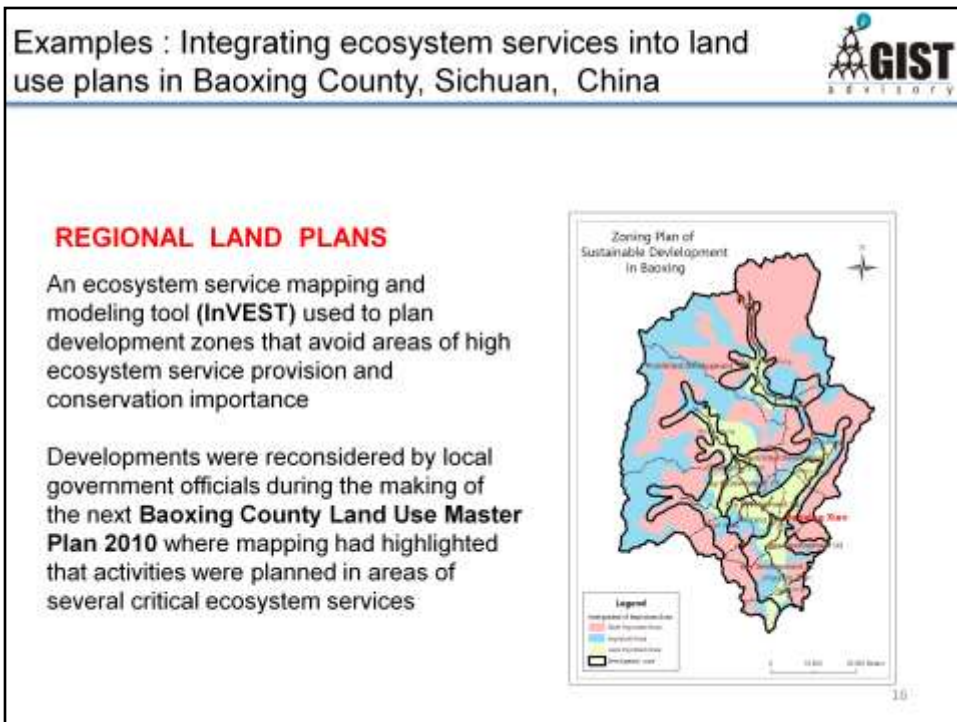
- TEEB did not take a cost-benefit approach. We see valuation as a human institution, as a way for society to give itself feedback. One can give value with no use of economics whatsoever. For example, take a sacred grove. To the local community, that grove has plenty of value and should not be destroyed, yet they communicate the value differently, without the use of economics.
- Communicating or demonstrating values is another challenge for valuation. Look at the images of TEEB. You can guess what ES they represent, some values are easy to express, but others are much more difficult.
- For the values you capture, you can identify a payment for destroying them. For example, you can pay to maintain biodiversity in order to continue harvesting products, i.e. logging, pharmaceuticals, and carbon sequestration. The purpose of ecosystem service payments is to provide compensation.
- Each valuation has its own purpose. Chapter 4 of TEEB was written not by an economist or ecologist, but by a social anthropologist.
- The TEEB view of valuation is cautious and layered through three approaches:
  - 1) Recognizing Value;
  - 2) Demonstrating Value; and,
  - 3) Capturing Value.



- In the diagram, the blue bubbles represent the three TEEB approaches. The words in red are the five types of strategies.
- Regional plans and legislative activities are in the recognizing value stage.
- Certification and Protected Areas (PA) evaluations start to incorporate more values in the demonstrating value stage.
- Payments for Ecosystem Services (PES) are in the capturing value stage because they involve a transaction (someone pays and someone receives payment).



- I find it interesting that not all strategies are what I call market strategies.
- There is a database, which has almost 115 examples of policy changes based on some sort of valuation. About half of them are PES. Twenty-five of them are freshwater PES.
- This gives you an example of where this is working, but they are not all market-based. We should recognize and appreciate this fact.



- This is my favorite example of regional and land plans. It involved using InVEST software.
- This is an example where ES was identified and the policy decisions changed based on understanding the ES values.

**Examples : Tubbataha Marine Park, Philippines**


**UNESCO World Heritage site, contains 396 species of corals & has higher species diversity per square metre than the Great Barrier Reef**

**LEGISLATION**


After 1998 Bleaching – Stakeholders meeting

“No-take” areas agreed, & later, President passed the Tubbataha Reefs Natural Park Act in 2010 ( 10 mile buffer zone around the no-take marine reserve) thus increasing Park by 200%


- ❑ 10% annual increase in live coral cover.
- ❑ fish biomass is four-folds better than the average healthy reef



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- This is another good example from the Philippines. A major coral bleaching event catalyzed this effort.
- After a large bleaching event in 1998, the community collectively decided to create no-take areas. This was based on collective action and it has been very successful. The legislation did not use economic valuation, but it recognized the needs of the community.




## Examples : Kampala Wetland

Services provided by the Nakivubo swamp include natural water purification and treatment & supporting small-scale income activities of slum dwellers

### P A EVALUATION

Ecosystems services provided by the swamp equal USD 1 million -1.75 million / year

If the swamp is converted then additional investment into a sewage treatment plant would be required with running costs of over USD 2 million / year




(Nakivubo designated a part of the city's greenbelt zone)

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- The Kampala wetland connects Lake Victoria to Kampala in Uganda. A Study evaluated the cost of converting the swamp to agriculture. The wetland acts as human waste recycler. The value of constructing a new sewage plant was more than the value of keeping the wetland, so they decided to preserve the wetland.





## Examples : 'Satoyama' Landscapes'

75 - 100% reduction in pesticides, traditional winter flooding rice farming adopted, & White Stork rice & other certified products sold at a "premium"

Konotori no Mai / Flying Oriental White Stork


**PES**

2003 - 2007: farmers paid 40,000 JYen per 1,000m<sup>2</sup> of rice paddies. Currently granted 7,000 JYen per 1,000m<sup>2</sup> by Toyo-oka City

**CERTIFICATION**

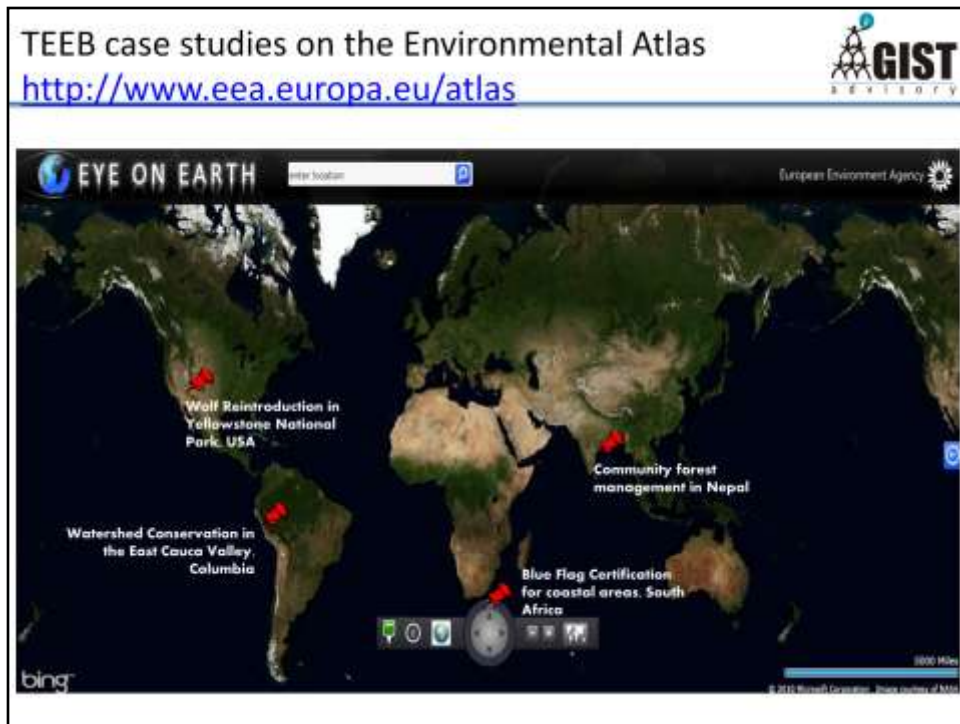
Rice sold at 23 % higher rate for reduced pesticide use, and 54 % more for organic farming

- ☐ White Stork habitat increased from 0.7 ha in 2003 to 212.3 ha
- ☐ Extinct in 1971, now has over 40 breeding pairs
- ☐ 1 billion JPY annually in tourism, & municipal income raised by 1.4 %



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- This is an example of certification and PES from Japan.
- The white stork went extinct in 1971. The city was fond of this bird so they decided to increase the amount of organic agriculture thereby reducing the impacts on a reintroduced breeding pair.
- This was successful because it became a hobby. The farmers were able to sell their rice for a premium as the white stork's habitat increased. Now there is an ecotourism center and the municipality receives increased revenues.
- This is a win-win-win scenario.



- All examples are on the website, <http://www.eea.europa.eu/atlas>.



## Selecting a case study with viewable key message



The screenshot shows a Bing map of South Asia with a red pin in Nepal. An information box is overlaid on the map with the following text:

**Community forest management in Nepal**

Community forest management is a successful avenue to provide health and family planning services as well as relieving environmental pressure in the Khata area of the Terai region in Nepal.

Below the text is a small image of a group of people and a water pump, followed by the word **NEPAL** and the text "Click to access case study".

Source : <http://www.eea.europa.eu/atlas>

- Select an area to get an overview of the project.

## Further case detail can be downloaded



**Community forest management in Nepal**

Community forest management is a successful avenue to provide health and family planning services as well as relieving environmental pressures in the Khata area of the Terai region in Nepal.

**NEPAL**  
Click to access case study



**FOREST CONSERVATION FOR ENVIRONMENT AND HEALTH, THE KHATA CORRIDOR PROJECT**

**Author:** Isma D'Agnes

**Review:** (1) [Bhishma P. Subedi](#) (bhisubedi@nrc.org), (2) [Sagar Singh Jodhi](#) (sncs@nrc.org)

**Key message:** Community forest management is a successful avenue to provide health and family planning services as well as relieving environmental pressures in the [Khata](#) area of the [Terai](#) region in Nepal.

**What is the problem?**

The [Terai](#) is a fertile [fertile](#) plain in Nepal. It has an outstanding assemblage of endangered wildlife such as Asian elephant, one-horned rhino, Bengal tiger, river dolphin and endemic birds. This forested landscape has seen much deforestation in recent decades following eradication of malaria in the 1940s, and is now Nepal's most populated region and the nation's rice basket. The [Terai](#) is rich in ethnic diversity: the landscape has a multi-cultural and multi-ethnic population of 6.7 million people. Despite the potential of the area's natural resources to contribute to people's livelihoods, challenges of dense population and poor health make it increasingly difficult to manage their lands. The people of the [Terai](#) are poor and rely on agriculture for their livelihoods. The majority of the population is reliant on firewood for cooking, and most of the population still uses inefficient traditional stoves. People in the [Terai](#) experience many common diseases, such as dysentery, eye infections, respiratory infections, tuberculosis and HIV.


The main drivers of biodiversity loss in the [Terai](#) include the over-harvesting of forests for fuel wood, increasing population and the lack of affordable alternative energy technologies.

Source : <http://www.eea.europa.eu/atlas>

- Continue to look at the full write-up, policy solutions, and lessons learned.

## REDD in the Ulu Masen Ecosystem, Aceh, Indonesia


(collaborative between govt. civil society and pvt sector)



The project uses land use planning and reclassification, increased monitoring and law enforcement, reforestation, restoration, and sustainable community logging on 750,000 ha of forest in the Ulu Masen Ecosystem and peripheral forest blocks located in the Aceh Province

**Actors**

1. Govt. (Provincial Government)
  - compliance and integration with, governmental and regulatory structures
2. NGO (Flora and Fauna Int.)
  - facilitate participatory processes for community development
  - spatial and land use planning
  - collaborative law enforcement and community based forest management
3. Private (Carbon Conservation Ltd.)
  - project design, development, start-up
  - carbon finance




Ulu Masen Ecosystem - Project Area

• estimates proposed activities will reduce deforestation in the area by 85% and 3,369,848 tons of CO2 emissions

- Estimates suggest activity will reduce deforestation and save 3.5 million tons of CO2 emissions.

## TEEB Case Studies



- Success
- Failures

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- Let us talk about some case studies.

## TEEB Case Studies



- Success
- Failures

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- First, we will discuss successes.

### Hiware Bazaar- A village of millionaires, Maharashtra, India

The use of an integrated watershed management based development approach have turned a village's misfortune into an ecological and economic success.

- increase the irrigation area from 70 ha (1993) to 260 ha (2006)
- livestock numbers have gone up from 20 in 1998 to 340 in 2003


Hiware Bazaar- before and after

- In Hiware Bazaar, there were stories of farmer suicides because of land degradation and poor water management.
- They worked to capture monsoon rains and develop irrigation. As a result, irrigated area increased and livestock numbers increased.

## Hiware Bazaar- A village of millionaires, Maharashtra, India

The use of an integrated watershed management based development approach have turned a village's misfortune into an ecological and economic success.

- **one fourth** of the village's **216** families are **millionaires** (in terms of Indian Rupees INR).



Hiware Bazaar- before and after




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- Now it is an icon of ecological development called the “millionaire’s village.”




## Hiware Bazaar- A village of millionaires, Maharashtra, India

watershed development programmes in the country have tried to take a similar approach to regeneration of resources by advocating an integrated, decentralized development model including the NREGA



- the **per capita** income of the village is **twice** the average of the top **10 %** in rural areas nationwide (Rs. 890 per month = US \$ 20 as per 2007 exchange rates).




Hiware Bazaar- before and after

- The average per capita income has increased and is twice the average of the top 10% of rural village areas.




## Ducks Unlimited: Conservation of North American Prairie on Private Lands, North Dakota, USA



**Marketing carbon sequestration services of grasslands & helping to fund conservation of highly endangered prairie and wetlands (habitat for hunting waterfowl).**

- carbon benefit of preserving and restoring grasslands could be sold in this market and could thereby generate the necessary funds for conservation easements.
- landowners receive compensation that is more competitive to what they could earn from converting grasslands on their property to cropland.
- protection of over 50,000 acres of native grasslands in the Prairie Pothole Region of North Dakota through carbon finance.



*Grassland Conversion Courtesy: Ducks Unlimited*

(Note : From 2002-2007, over 475,000 acres of grassland were converted to cropland in North and South Dakota)

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- Grasslands in the United States have a history of being converted to agricultural or grazing lands.
- This example is about measuring carbon sequestration and protecting grasslands through carbon financing.

## The Kennecott Inland Sea Shorebird Reserve, Utah, USA

Kennecott Utah Copper LLC, a subsidiary of Rio Tinto, manages the Inland Sea Shorebird Reserve (ISSR) and also preserves Great Salt Lake habitats to attract migratory birds


- this wetland offset project is recognised as one of the largest and most successful mitigations in the United States
- creation of 1,011 ha shorebird and waterfowl refuge
- approximately 150,000 migratory birds and waterfowl visit this area each year
- the number of bird species at the ISSR has grown from 50 in 1995 to more than 150 in 2010.

The outcome of this project is a net gain for biodiversity. Credits from the bank (surplus restored land) can be used by Kennecott or sold to others for wetlands mitigation in accordance with the terms of the Bank Agreement with the US government (Brownlie, 2008).



- Utah, USA-Kennecott Inland Sea Shorebird Reserve
- Here again, there is a combination of biodiversity and wetland carbon sequestration interests.

## TEEB Case Studies




- Success
- Failures

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- There are failures too.

## Willingness to pay for conservation of Asian Elephants in Colombo, Sri Lanka



**The Problem:** Human – elephant conflict leading to loss of human lives and crop and property damage to the tune of Rs 1121 million/year. (10.2 million USD)


**Main Factors under consideration:**

- **creating a market:**
  - awareness creation about socio-economic, cultural benefits of elephants
- **determining willingness to pay/accept:**
  - town residents WTP to add to their life insurance premiums for elephant conservation
  - villager's WTA accept elephant damage insured by this scheme
- **Local Roles:**
  - to 'establish ownership' of the scheme, farmers would be expected to pay a nominal annual fee of Rs 650 (less than US\$6)

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- For example in Sri Lanka, where everything seemed fit to succeed, the project did not succeed.
- There was willingness to pay and willingness to accept payment, but it still failed.

## Willingness to pay for conservation of Asian Elephants in Colombo, Sri Lanka



**Main Factors under consideration:**

- **Role of Government:**
  - a commission of 10% was set aside for government agencies or organizations selected by the wildlife conservation department to compensate organizations for the implementation costs of setting up the scheme in remote areas

**The scheme failed because there was a single insurer implementing the scheme which was therefore exposed to management risk.**

**Lessons learned:** New products such as this are best launched on an "industry" basis, not "single organization" basis, and the local Insurance association should have been involved, several Insurers offered the same product competitively

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- It seemed to be a strong design because the willingness to pay was greater than the price demanded by those willing to accept. Corruption and scandal hurt the project and it fell flat.
- The lesson is that, if you have an industry role, engage on the industry side. Otherwise, you run the risk of management failure.

## Conservation could save commercial fishery in the Patagonian Marine Ecosystem, Argentina

Implementation of conservation strategies is needed to avoid the collapse of commercial fish stocks and the fishing industry.

- due to overfishing, the fish size is decreasing and discards (mainly small juvenile fish) represent between 11% and 24% of total landings between 1990 and 1997
- in economic terms, this represents an annual loss of US\$ 11–77 million
- ecological and economic analysis shows that the establishment of conservation zones, the enforcement of fishing quotas and a reduction in fishing efforts, will allow the recovery of fish stock to biologically acceptable levels.

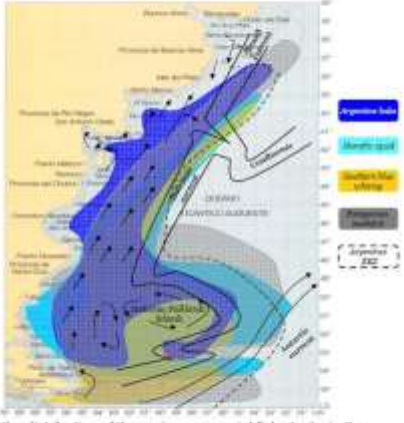
**Despite these efforts, quotas still fail to meet the recovery goals because foreign fishing fleets remain unregulated.**



• due to overfishing, the fish size is decreasing and discards (mainly small juvenile fish) represent between 11% and 24% of total landings between 1990 and 1997

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• ecological and economic analysis shows that the establishment of conservation zones, the enforcement of fishing quotas and a reduction in fishing efforts, will allow the recovery of fish stock to biologically acceptable levels.



Pattern of the distribution of the main commercial fish stocks in the Patagonian Large Marine Ecosystem. Source: Villasante and Sumaila (2008).

- In this marine example, there is a lot of poaching from other nations. Enforcement is weak therefore, quotas fail to meet set goals.
- Although the plan was well designed, the lack of enforcement caused the failure.

**Tuul River Watershed Services,  
Ulaanbaatar, Mongolia**



A Govt. of Mongolia and World Bank initiated study to better understand the ways in which the natural environment contributes to the economy

**Findings:**

- Upper Tuul watershed generates valuable ecosystem services, which benefit local communities
- conservation and sustainable use scenario is estimated to yield a Present Value, **over 25 years, of USD 1.15 billion (Tug 1,370 billion)**
- This is appreciably higher than the Present Values generated under BAU at **USD 1.09 billion (Tug 1,293 billion)**

**Recommendations:**

- further funding to be put aside for the park management
- there is a potential for payments for ecosystem services, where landowners are paid for the ecosystem services they generate

**While there was no policy uptake, the study recognizes that the key challenge is the development of long term incentives for conservation**

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- This example failed due to lack of political support.



## Implementing TEEB Approach : Six-Step Assessment



### Six steps for effectively appraising ecosystem services


This approach is not a fixed recipe. It is intended to guide policy makers in designing their own processes:



1. Specify and agree policy issues with stakeholders
2. Identify which ecosystem services are most relevant
3. Define the information needs and select appropriate methods
4. Assess ecosystem services
5. Identify and appraise policy options
6. Assess distributional impacts of policy options

- TEEB's six step assessment process.

## Applying the approach: Spatial planning in Sumatra



**Step 1:** Following a new spatial planning law (2007) the Indonesian Government designs spatial plans at district levels. An NGO forum supports Riau districts in preparing spatial plans

**Step 2:** In Riau, lowland forests are affected by intense logging and forest conversion to plantations, affecting biodiversity, water regulation, and causing erosion

**Step 3:** for planning with ecosystem services, their occurrence and their spatial connections need to be known. Assessment with InVEST – a tool for mapping and analysing services.

Photo: Ahmad Zamroni/AFP/Getty Images



Source: Natural capital project and TEEB case Integrating Ecosystem Services into Spatial Planning in Sumatra

- This is an illustration of how the TEEB stepwise approach could be integrated with the Natural Capital InVEST Project.
- Sumatra has abundant biodiversity; it is the only place on earth where tigers, elephants, orangutans, and rhinos all reside. Local communities rely on many ES, particularly the provision of a clean, regular water supply for drinking, hydropower, irrigation, protection from floods, droughts, forest fires, landslides, regulation of air pollution, and maintenance of fertile soils for agriculture.

### Step 1: Agree on the issue

- In October 2008, the ten provincial governors of Sumatra and four Indonesian government ministers made a historic commitment to protect the remaining forests and critical ecosystems of Sumatra. Local land-use planning is critical for achieving this commitment. Indonesia's national spatial planning process operates on a 5-year cycle. Spatial planning has been undertaken in Indonesia for many years, but has only had a legal basis for measures to enforce compliance since 2007, following the Spatial Planning Law 26/2007 (see Hudalah and Woltjer, 2007).
- In 2010, the Indonesian government is working to design spatial plans at province and district levels. Much decision-making power resides at this local scale because of decentralization. At the national level, renewed spatial planning efforts involve all relevant ministries. At the provincial level, an NGO forum supports planning efforts.


### Step 2: identify relevant ES

- Forest conversion, mostly for palm oil, pulp and paper plantations, and illegal logging, are causing losses of biodiversity and degrading many ES. In particular, conversion of lowland deep peat forests – mostly in eastern Sumatra – is a major contributor to global carbon emissions. Existing and prospective forest concessions threaten to have even greater adverse impacts. It is commonly overlooked that forests provide a range of valuable ES, beyond standing timber. The lack of incentives to sustain ES is one of several root causes of these problems.

*Step 3: define info needs and choose assessment tool*

- InVEST provides mapped information on where, and how much, ES are supplied on the landscape, and how these patterns might change under future land use scenarios. It can be overlaid with biodiversity information to see where ecosystem service and conservation priorities overlap. InVEST models are based on production functions that define how an ecosystem's structure and function affect the flows and values of ES. The models account for both service supply (e.g. living habitats as buffers for storm waves) and the location and activities of people who benefit from services (e.g. location of people and infrastructure potentially affected by coastal storms). Since data are often scarce, the first version of InVEST offers relatively simple models with few input requirements. These models are best suited for identifying patterns in the provision and value of ES.

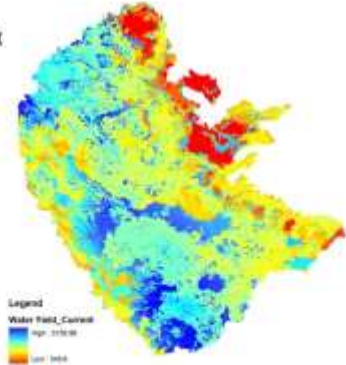
## Applying the approach: Spatial planning in Sumatra



**Step 4:** Based on data from the districts, InVEST modelled services under two scenarios: Sumatra Ecosystem Vision (island wide strategy) and BAU

**Step 5:** specific recommendation were made based on the maps: where to restore habitats, where to allocate forest concessions, for which areas to apply for forest carbon PES, ..

**Step 6:** Focus on global and local ecosystem benefits. Social impact assessment of policy responses: tbc



Source: Natural capital project and TEEBcase Integrating Ecosystem Services into Spatial Planning in Sumatra

### Step 4: Conduct the assessment


- InVEST was used to model the quantity and location of high quality habitat, carbon storage and sequestration, annual water yield, erosion control, and water purification under two scenarios: (i) the Sumatra ecosystem vision of sustainable land use as proposed in a Roadmap Action Plan, (ii) a business as usual scenario corresponding to the government's current spatial plan

### Step 5: Appraise policy options

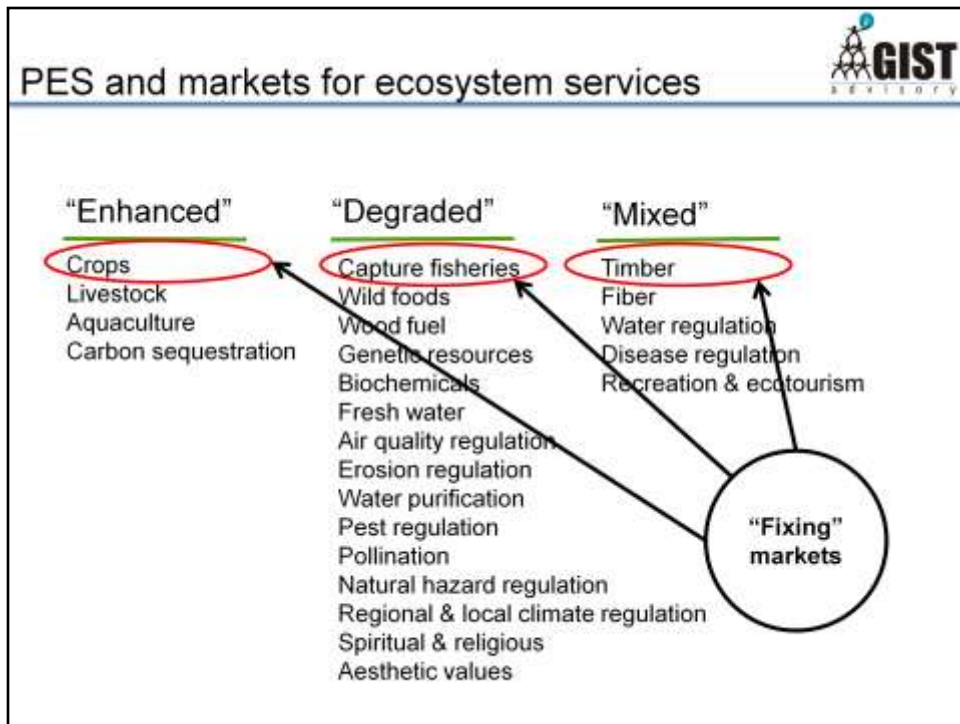
- Results were disseminated to government representatives from nineteen districts. Preliminary recommendations on specific actions were offered, based on the potential gains or losses in ES if the Sumatra Ecosystem Vision (and roadmap) were implemented. For example, based on InVEST results, recommendations were made on how to prioritize areas for forest restoration based on habitat quality and the potential for reducing erosion.
- Information on ES can also be used to advocate for, and help implement incentive mechanisms that reward sustainable land use, such as forest carbon projects, payments for watershed services, certified forestry and agriculture, and ecotourism. InVEST results informed discussions of forest carbon projects by identifying where carbon storage and sequestration potential is high.

### Step 6: Assess distributional impact of ES change (due to policy response)

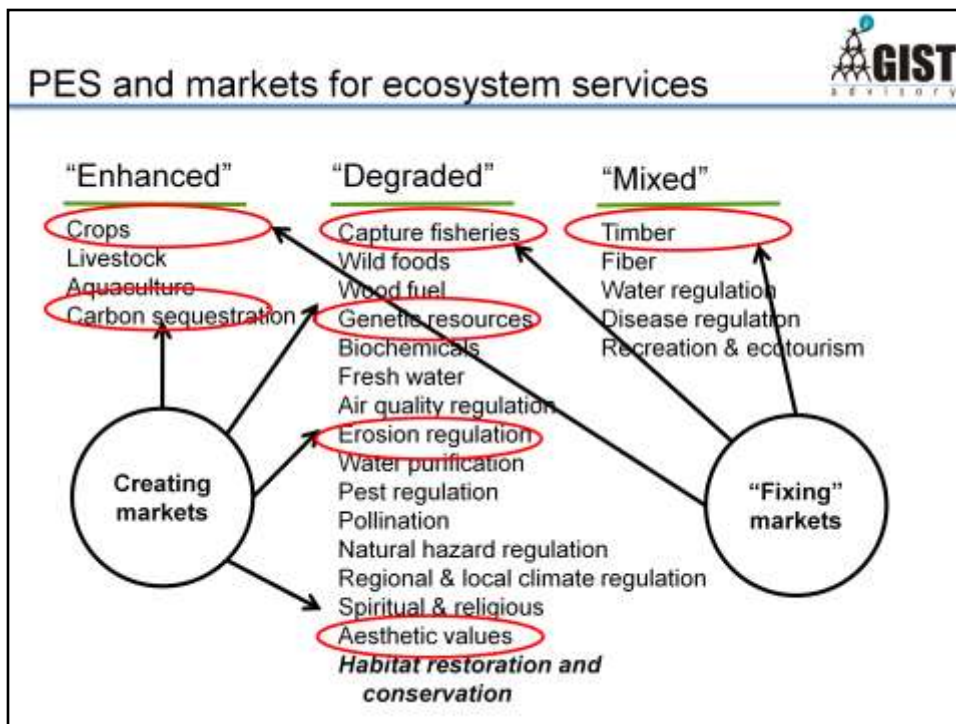
- Focus on global (carbon) and local (water, erosion, etc.) ecosystem benefits.
- Comparison of scenarios showed the social impact due to forest conversion. But social impact assessment of policy responses is unclear
- The success of InVEST relies on the people who use it.

PES and markets for ecosystem services		
		
<u>"Enhanced"</u>	<u>"Degraded"</u>	<u>"Mixed"</u>
Crops	Capture fisheries	Timber
Livestock	Wild foods	Fiber
Aquaculture	Wood fuel	Water regulation
Carbon sequestration	Genetic resources	Disease regulation
	Biochemicals	Recreation & ecotourism
	Fresh water	
	Air quality regulation	
	Erosion regulation	
	Water purification	
	Pest regulation	
	Pollination	
	Natural hazard regulation	
	Regional & local climate regulation	
	Spiritual & religious	
	Aesthetic values	
Source: Millennium Ecosystem Assessment, 2005.		

- The slide lists some of the market-based solutions that exist. I would like to discuss market solutions at the end of the presentation because they do not represent the only solution and it should lead into a nice discussion.
- There are situations where markets are well suited to work but others where they are not. Not everything can be bought and sold on markets, only private claims can be traded in such a way. For instance, markets are not well suited to solve social problems.
- When it comes to public services like carbon, it takes a monumental effort to create one or two success stories.
- Furthermore, when you talk about carbon markets, you are talking about derivatives. That means you are trading the debits and credits of a ledger system. All the problems of derivative markets will affect carbon markets. These compound with the risk of corruption and people stealing.
- This is difficult because you are trying to create rules and develop a synthetic solution to a complex problem so the chances of success are small. We need complex solutions that involve public policy and community cooperation. With that said, there are still opportunities for markets.



- The circled markets represent those that are "fixing" markets. In "fixing" markets, we can attempt to address externalities through certification. In timber and fisheries markets, we have the Forest Stewardship Council (FSC) certification and the Marine Stewardship Council (MSC) certification respectively.
- Similarly, in the crop markets, you can ensure polluters pay by incorporating a charge for pollution into the value of a good.



- There are other solutions in "creating" markets.
- This involves creating new markets. For instance, we could create a new market by charging advertising companies each time they borrow an image from nature. Millions of nature images are used each day, but the companies never pay a penny for using nature as inspiration.
- We should not come to the table thinking markets and then wonder why they do not work. Markets are not always the best solution.





## Why “Corporation 2020” ?

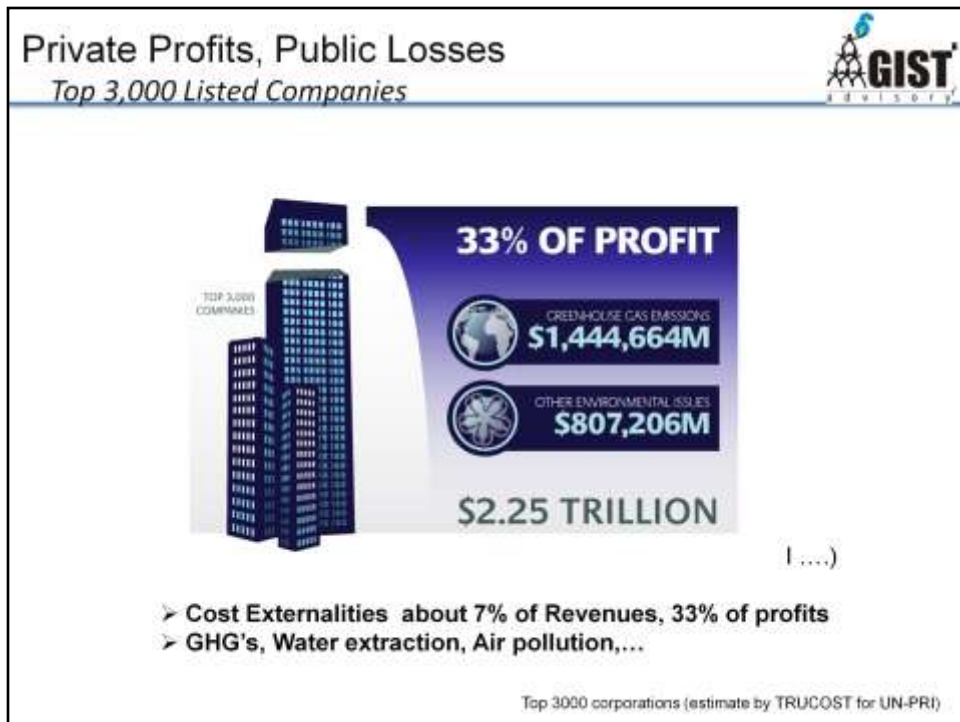
**TEEB** : to end the economic invisibility of nature  
[www.teebweb.org](http://www.teebweb.org)

**UNEP's Green Economy Report** : to make compelling macroeconomic and sectoral cases for a 'Green Economy'  
[www.unep.org/greeneconomy](http://www.unep.org/greeneconomy)

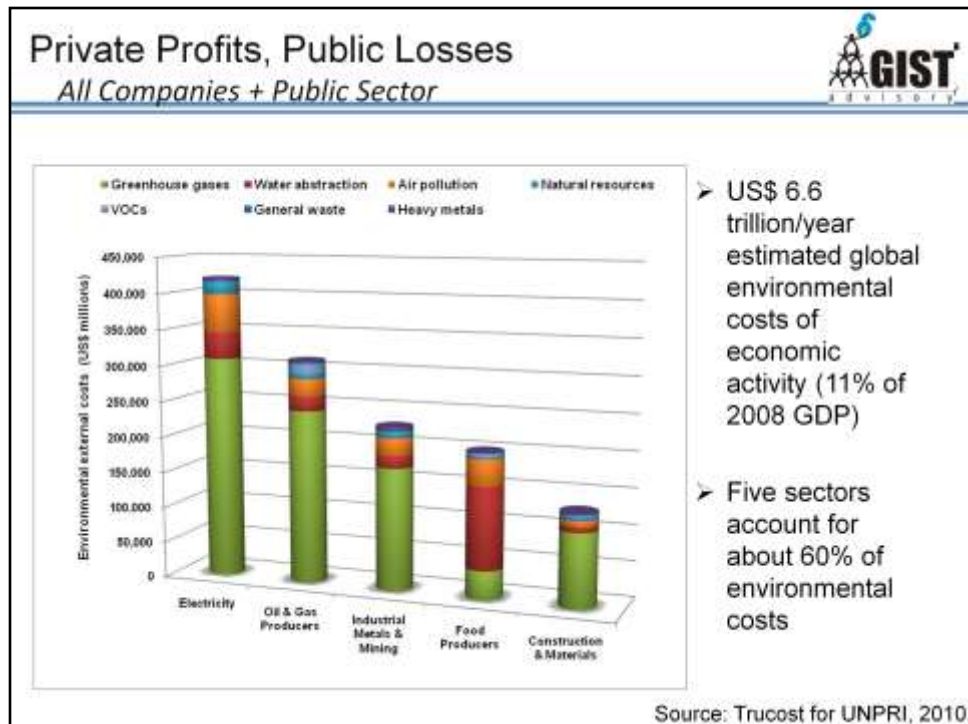
**Corporation 2020** : to transform the economy's main agent - Today's Corporation – so that it may respond to the value of nature , and achieve a Green Economy

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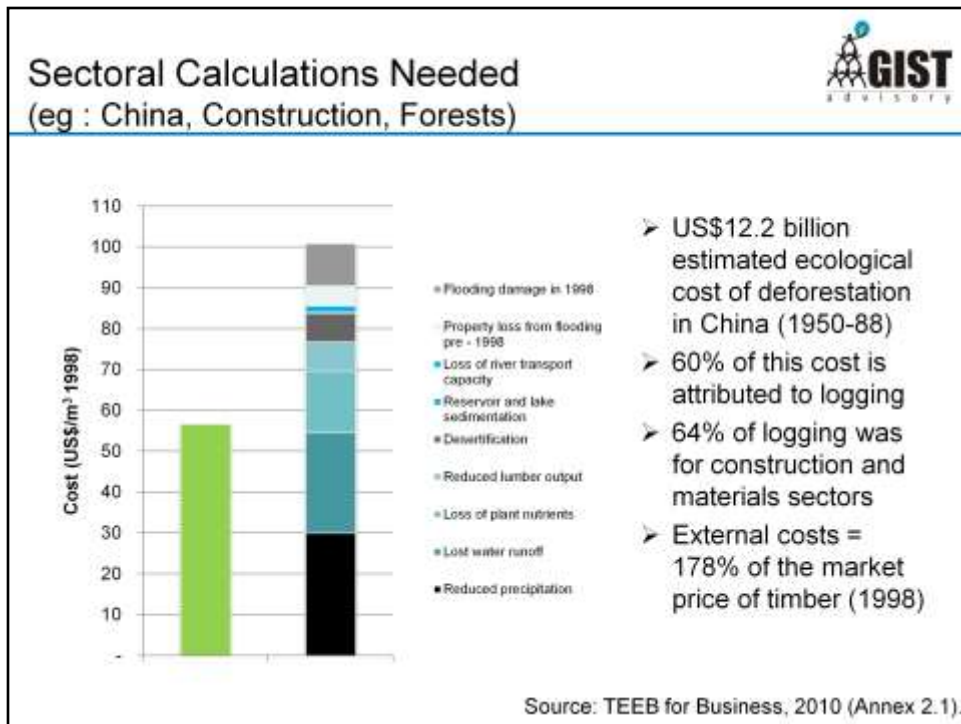
- I am writing another book called *Corporation 2020*.
- I chose to write the book to discuss and show compelling logic for a green economy over a brown economy. We are still not getting the behavior changes that we need because companies seek out resources where good governance is lacking. Today's corporations are hardwired to arbitrage markets.
- I have experience doing this. After success of Mumbai, we needed a regulation-free zone. The Singapore government offered to pay half of our constructions costs so I accepted. This is how corporations think. We have to recognize that these are the things that corporations exploit. They will not look beyond the arbitrage because their main concern is to make profits. The whole point is to maximize profits; corporations are not geared to align goals with society.
- Most importantly, arbitrage tells you to go to market. Global arbitrage is being supported by global markets. It helped buy a whole slew of regulatory changes in international trade. It is wedded to a model that is fundamentally a brown economy. It does not recognize externalities and does not promote a green economy. These are some of the ideas I am trying to address with this book.



- It is possible to work out the externalities and we need to address them.




- This diagram represents the public loss for private profits by sector.



- This is an example illustrating the real cost of deforestation from timber production in China.
- It shows the local damages: loss of river transportation, decreased water quality, reduction of lumber output. Most lumber was for export. All of these costs are born by China and the profits go elsewhere (to Europe, United States, and other international companies).
- If you add the external costs to the market price, the price of lumber in Beijing should have been 250% of what it was. A construction company should report these externalities, so the costs reflect true costs.

## PUMA : Measuring Environmental Impacts Along the Supply Chain




Analyses of the water and GHG impacts were performed across PUMA's value chain, including the operations of raw material and product suppliers as well as logistic services, which PUMA has limited control over.

- Tier 4: Raw material production, such as cotton farming, oil drilling, etc.
- Tier 3: The processing of raw materials, such as leather tanneries, chemical industry, oil refining
- Tier 2: Outsourced processes such as embroiders, printers, outsole production
- Tier 1: The manufacturing of its products
- PUMA core operations: Design, logistics services, warehousing, head office functions and retail


Source : PPR / PUMA Press Release, May 16<sup>th</sup> 2011

- Reporting will only work if it is on an industry basis. All global construction companies need to get together and agree on a reporting scheme and adhere to it. It cannot just be China doing it while we ignore impacts elsewhere. They cannot shift to importing wood from Indonesia because that just moves the problems somewhere else. It needs to be a united effort.
- We need more visionary companies like PUMA. PUMA examined its entire supply chain based on four tiers.

<div> <div>PUMA : Measuring Environmental Impacts Along the Supply Chain</div> <div>  </div> </div>			
2010	Non-financial performance	Economic value € million	Economic value %
<b>PUMA Operations:</b>			
Greenhouse Gases (ktCO <sub>2</sub> e)	110.1	7.2	7.6%
Water ('000 m <sup>3</sup> )	108.8	0.1	0.1%
<b>Tier 1 suppliers</b>			
Greenhouse Gases (ktCO <sub>2</sub> e)	131.4	8.6	9.1%
Water ('000 m <sup>3</sup> )	5,319.8	0.8	0.8%
<b>Tier 2 - 4 suppliers</b>			
Greenhouse Gases (ktCO <sub>2</sub> e)	476.0	31.2	33.1%
Water ('000 m <sup>3</sup> )	72,064.5	46.5	49.3%
<b>Total:</b>			
<b>Greenhouse Gases (ktCO<sub>2</sub>e)</b>	<b>717.5</b>	<b>47.0</b>	<b>49.8%</b>
<b>Water ('000 m<sup>3</sup>)</b>	<b>77,493.1</b>	<b>47.4</b>	<b>50.2%</b>
<b>Total economic value</b>		<b>94.4</b>	<b>100%</b>

Source : PPR / PUMA Press Release, May 16<sup>th</sup> 2011

- PUMA looked at its entire supply chain with regard to carbon and fresh water. They discovered that externalities go beyond their direct activities to the activities of their suppliers. Most of the damages to society come from their suppliers' externalities, but PUMA is still accountable because those supplies make up the PUMA products.
- PUMA has a sustainability-conscious executive who recognizes that something needs to be done about the €94 million worth of damages the supply chain causes.
- This is the right way to move forward. When we report externalities, people can have a complete view and understanding of the products. You look at the value chain and then you move forward.




## Demands Made of the TEEB Community ..

- TEEB Capacity Building in Developing Countries
- "Country" and "Regional" and "Sectoral" TEEB Analyses
- Green National Accounts ("WAVES" - WB, UNEP, & Others)
- Estimating & Reporting Business Sector Externalities
- Identifying & closing Ecology & Valuation Knowledge Gaps
- Communicating the Issue to Citizens

- These are the interests of the TEEB community.






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## Opportunity : “TEEB for Business Coalition”




- **Mission** : to coordinate thinking and action on business externalities, including the evolution of valuation methodology, reporting standards, and assurance for natural and human capital externalities of business
- **Context**:
  - TEEB project – compelling economic case for action
  - Many different voices active in this space, often fragmented
  - Need for collaboration, coordination, and collective action
- **Way forward**: “TEEB for Business Coalition” supported by a “Foundation”
  - Convened by ICAEW, leading civil society organisations (including ICUN, WWF-UK, GRI) and committed businesses

**5-year budget with Coordination staff in London, Brazil (Yr2), India (Yr3) and Tokyo (Yr3) of USD 5.8 million - seeking funding now**

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- To address business sector externalities, there is a “TEEB for Business Coalition.”
- The group’s collaboration is impressive.
- The charge of developing an accounting system for corporate externalities is huge. The good news is that the United Kingdom (UK) has agreed to fund the effort. It will start in the UK and then will move to Brazil and India and so on.
- These are the types of efforts that need funding so that we move together on a united front and avoid developing ten different ways to calculate the same thing. There is a large community working on this and all members share a vision.




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- There are opportunities in sectoral and regional accounting areas.

# "Green Accounting for Indian States Project" (GIST, 2003 – 2008)



**...THE PRODUCT**  
Eight Monographs....




**.....THE TEAM**

Prof. Rajiv Sinha, Dr Haripriya Gundimeda,  
Pavan Sukhdev, Dr Pushpam Kumar,  
Sanjeev Sanyal, and P. Yesuthasan

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- In full disclosure, I started working with TEEB from my work with green accounting for the Indian States Project. It needs more effort and will have a chance to happen again.

# "Green GDP" Adjustments



**GIST**  
ADVISORY

## GIST Monographs

**M2**

**M1**

**M7**

**M4**

**M6**

2002-03 (INR Mio / % of GDP or NSDP)	Assam	Himachal	Bihar	India
GSDP or GDP	354,314 100.0%	159,460 100.0%	887,150 100.0%	19,295,454 100.0%
NSDP or NDP	317,208 89.5%	142,024 89.1%	787,033 87.7%	17,863,624 88.9%
Agriculture Losses - Soil Erosion, Sedimentation, Quantity changes	-4,980 -1.6%	-1,130 -0.8%	-12,054 -1.3%	-250,695 -1.3%
Agriculture - Subsidies	-9,670 -3.0%	-2,604 -1.8%	-21,457 -2.7%	-312,634 -1.8%
Forests - Depletion of Timber/Carbon, Fuelwood, NTFP	-663 -0.2%	-51,394 -36.2%	-1,032 -0.1%	-74,639 -0.4%
Forests - understated services of Timber/Carbon, Fuelwood, NTFP	1,703 0.5%	56,539 39.8%	-11,883 -1.3%	154,524 0.9%
Forests - Ecological Services Lost	-21,824 -6.8%	-90,470 -7.4%	-3,267 -0.4%	-190,493 -1.1%
Forests - unstated benefits of Ecological Services	9,064 2.5%	5,274 3.7%	8,119 1.0%	225,594 1.3%
Forests - Depletion of ecotourism and bioprospecting	-23,660 -6.7%	-13,078 -8.2%	-2,711 -0.3%	-461,525 -2.4%
Forests - unstated ecotourism and bio-prospecting benefits	9,306 2.6%	632 0.4%	2,529 0.3%	137,144 0.7%
Freshwater - Water Quality Losses	-4,294 -1.4%	-13,806 -9.7%	-62,755 -6.4%	-580,586 -3.4%
<b>Stock Adjustments</b>	<b>-85,221 -17%</b>	<b>-89,865 -42%</b>	<b>-61,838 -8%</b>	<b>-1,671,758 -9%</b>
<b>Flow Adjustments</b>	<b>9,453 3%</b>	<b>59,841 42%</b>	<b>-22,492 -3%</b>	<b>204,538 1%</b>

- I feel the need for Green GDP in India as the next COP approaches. We have all of the numbers and background, but we need to update it.

## Lessons Learnt...



- Work with governments and corporations to discover, evaluate, report, & manage their externalities
- Think big, Start small, Act fast
- A Smart Tomorrow, in which Natural Capital is acknowledged, valued, rewarded & conserved

Opportunity...	GIST "Collaborative"	
MISSION	<ul style="list-style-type: none"><li>• Work with governments and corporations to discover, evaluate, report, &amp; manage their externalities</li></ul>	
MOTTO	<ul style="list-style-type: none"><li>• Think big, Start small, Act fast</li></ul>	
VISION	<ul style="list-style-type: none"><li>• A Smart Tomorrow, in which Natural Capital is acknowledged, valued, rewarded &amp; conserved</li></ul>	

- The GIST collaborative developed out of these lessons.



# Opportunity : Updating GIST Analysis for India TEEB

GIST Monograph Updating						
Period: June 2011 - October 2012						
		Staff Costs		Other Costs		
		Senior expert guidance & data analysis (2)	Research Associates (3)	Local data collection (Transport & Accommodation)	Admin / oversight	
Days		30	43	540		
GIST Rate <sup>***</sup> per day		160	140	150		
Days engaged in project	<b>Monograph 1:</b> The value of timber, carbon, fuelwood, and non-timber forest products in India's forests	5	7	90	450	6,000
	<b>Monograph 2:</b> Estimating the value of agricultural cropland and pastureland in India	5	7	90	200	6,000
	<b>Monograph 4:</b> The value of biodiversity in India's forests	4	7	90	450	6,000
	<b>Monograph 5:</b> Estimating the value of educational capital formation in India	5	7	90	300	6,000
	<b>Monograph 7:</b> Accounting for the ecological services of India's forests: soil conservation, water augmentation, and flood prevention	8	8	90	450	6,000
	<b>Monograph 8:</b> Accounting for freshwater quality in India	5	7	90	300	6,000
	<b>Institutional charges<sup>*</sup></b>	1,440				
	<b>Total</b>	6,240	6,020	81,000	2,150	36,000


All costs in USD

<sup>\*</sup>Monthly values indicate monthly costs


<sup>\*\*</sup>Please note that the per day rates specified for this project are considerably lower than the GIST rates

<sup>\*\*\*</sup>These charges accrue to the senior expert who is associated with oversight and whose institution, Indian Institute of Technology Bombay, requires 30% of her contracted sum

- Here is an example of a proposal. It may not be big, only \$125K, but think of the impacts and what it could do for the country in terms of global and national policy.



## Opportunity : National TEEB study for Georgia




- Part of **Caucasus Ecoregion** - one of the 25 globally significant 'biodiversity hotspots'
- High level of **species richness** & **significant level of endemism**
- **Key environmental pressures** include illegal logging, fishing, poaching, unsustainable water management, fuel wood collection and overgrazing
- President of Georgia approached TEEB Community through Yolanda Kakabadse with a request to run a "Georgia TEEB"


**Estimate for a "Georgia TEEB" study (ecosystem mapping, policy prioritizing, economic valuation and reporting phases) is US\$2 million.**


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- The President of Georgia wants a full-scale TEEB.
- Georgia is an interesting scenario. It is a small country with incredibly high species richness combined with high logging pressure and fish poaching.



## Opportunity: TEEB for Agriculture






- The value of ecosystem services to agricultural production
- The economics of agricultural waste
- The economic and environmental impact of subsidies to conventional agriculture
- The economic and environmental impact of genetically modified crops
- The value and impact of virtual water in traded agricultural products

Source: UN Photo/John Isaac. Girl working in a rice field near Chengdu, Sichuan, China


- There is good progress putting together a proposal for a TEEB for agriculture. It will measure the impacts of subsidies on agriculture, the economics of agricultural waste, etc.
- People keep forgetting that if you export food grains, you are importing water shortage. The more numbers we have will only help us develop a better picture to communicate this issue to the public. It is a biodiversity issue because where you export to where you import makes a difference.



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Identification of knowledge gaps and limitations and mapping into national policies : Challenges and options




1. Links between biodiversity, ecosystems and resilience
  - roles of species interactions and functional diversity for ecosystem resilience are unclear
2. Dynamics of ecosystem services
  - a need to develop specific tools to contribute to better assessment of spatial and temporal dynamics of service provision, especially in relation to defining who benefits, where and to what extent?
3. Understanding the dynamics of governance and management of ecosystems and ecosystem services
  - trade-offs and complementarities involved in the provision of bundles of ecosystem services, and how do changes in the configuration of ecosystems affect their value?

Source: TEEB – The Ecological and Economic Foundation

- Finally, there are any number of opportunities to identify and keep closing the ecology and valuation gaps, both big and small.
- Money is available to support this research.

Identification of knowledge gaps and limitations and mapping into national policies : Challenges and options


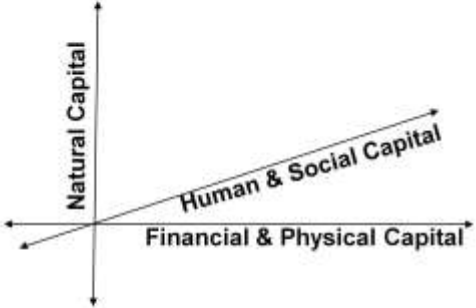


4. Valuation methods and benefit transfer
  - Since marginal values are likely to vary with ecosystem characteristics, socio-economic characteristics of beneficiaries, and ecological context, care needs to be taken to adjust transferred values when there are important differences between study and policy sites.
5. Valuations and its context
  - Valuation is often carried out in a socio-cultural context eg: a patch of forest land considered as a 'sacred grove' for one community may not have the same significance for another
6. From micro foundation to macro policy
  - most valuation exercises do not allow for ecosystems and economies to impact each other simultaneously

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Source: TEEB – The Ecological and Economic Foundation

- However, the mechanics of disseminating the numbers are not well supported.

## Recognizing Reality : **Natural Capital**



*Can economies navigate a complex, risky, "3-D capital" space with an ancient economic compass ?*

*Can companies remain "profitable" and nations keep "growing GDP" whilst not measuring & managing their impacts on **Natural Capital**?*

- We need to do this; we have to do this.
- The fact that we do not put natural capital on our balance sheets is a huge mistake. TEEB was reporting on natural capital. The methodology is consistent. Natural capital valuation is so location specific and there are so many different strategies. It is important to include it all. Make sure you follow the thinking process. If you want to eliminate a solution, go ahead just make sure you have a reason. In Germany, the same six step process works. The steps make as much sense in Germany as they do in Indonesia, which speaks to TEEB's community effort.
- GDP is the bad compass. It will tell you about profits but not about the value. You need much more information and that is the direction we must to go.
- I am a firm believer that you cannot manage what you do not measure and right now we are not measuring what is important. Now is as good of a time as any to start measuring.





Thank you!  
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# Seminar 4 Discussion Synthesis

June 23, 2011

***This document is a synthesis of important topics and questions discussed during the question and answer period immediately following Mr. Pavan Sukhdev's presentation. Please keep in the mind that the following is only a recap and speaker identities have been removed, except for Mr. Sukhdev. We hope that the following notes and discussion questions will be used as resource to advance further discussions about ecosystem services.***

***Below you will find a summary of specific key questions and topics that were covered during the Seminar discussion.***

## Question 1

First, you made a very compelling argument about the difficulty of creating markets with which I think there is misplaced infatuation. Specifically you mentioned the challenges around greenhouse gas emissions and I have never thought of it in those terms. I take it that those challenges will likely be an impediment to a global greenhouse gas emissions market. What is your outlook for the cap and trade regulatory framework as opposed to taxation?

MR. SUKHDEV

- I am a bit of a pessimist when it comes to this process because it is built on putting 192 countries in one room in search of a consensus. It will not work. Imagine asking 192 people what film they want to watch - you will never reach a consensus.
- Reducing Emissions for Deforestation and Forest Degradation (REDD+) is more likely to work because it came from consensus. I think this approach will work in carbon markets.
- If goods and services are ranked and rated based on their carbon content and can get the stamp of carbon efficiency, then this can start attracting interest from corporations. We need to show that carbon efficiency will have returns.
- If PUMA wants to sell "carbon free shoes," they have to offset US \$45 million worth of carbon. In my opinion, something like this is more likely to work. The seeds of this are beginning to happen but it is not working because there are too many vested interests that are impeding its progress.

## Question 2

We have talked about the notion of creating corporations as agents conscious of externalities. Is your vision to do this by 2020?

MR. SUKHDEV

- Not entirely, getting corporations to disclose externalities is only one way. PUMA is demonstrating that it is possible, but that does not mean that they will actually commit to reducing or eliminating those externalities. Today, the chief executive officer (CEO) of PUMA is doing it because he feels like it. Tomorrow, he will need to be told that he has to do it by the international community – that is what will make the difference.
- We need to work with accounting bodies to require this kind of reporting and to require companies to do what is in the interest of the public. The Institute of Chartered Accountants in England and Wales (ICAEW) has a charter that tells participants to go with the public interest even if it conflicts with shareholder interest.
- The ability to leverage without real control needs to change. Right now, we do not have any real limits. Today it is up to markets and that means banks (who are lending more and doing more derivatives to compete to make profits). We take the risk off our balance sheets and give it to someone else. The balance sheet is not a resting place for debt; it is a passageway for debt so there is no "pain." Through the modern financial system, we give infinite leverage on one condition: the market will catch you – but it will not.
- Market research creates product demand. We work on human frailty and insecurities. Yes, you need a car in California to travel, but do you need a Porsche or an Aston Martin? Marketing makes you want it. Is it ethical to play on someone's insecurities and make them think that they need the nice car? There is no way to control this.
- An advertisement is an inducement. I can say whatever I like to get you to buy it and create demand. This is another huge issue that needs addressing. These are key changes that cannot happen on their own. It will take increased regulation and consumer knowledge. Consumers need to participate, which in turn, requires a lot of education.



- The playing field is not equal. If you were a businessperson, why would you enter the renewable energy business when we give a trillion dollars' worth of subsidies to the oil industry? It would not make sense from a business perspective.

### Question 3

When it comes to certification, we have not seen a price premium for Forest Stewardship Council (FSC) wood to the same extent we have seen for grass feed beef or sustainably harvested fish. I am interested in the diagram from slide 13. Payment for ecosystem services (PES) was separate from the markets in the capturing value bubble. Do you think there are enough public funds for REDD + to be significant and adequate? Or are the potential market interests driving it?

MR. SUKHDEV

- REDD+ will not work with just a few leading nations addressing and allocating reserves from the fund. Just as you need benefits on the sales side, you need the nations, states, and communities to benefit as well. You need criterion to sell and receive REDD+.
- In addition, carbon needs to be included. By creating green carbon, you could generate interest on the larger scale. It needs countries that are willing to pay and constituents who are willing to participate. This would benefit REDD+ and we are close. I do not think we are far away because we have the willingness to pay on top and bottom levels.
- Your other question is also interesting. The volume of FSC certified products is going up and up and maybe it is a result of limited price differentiation. FSC is delivering in terms of volume not in terms of unit price. The white stork example I presented exemplifies the opposite. The white stork rice delivers in price but very little in terms of area protected. I do not see the small price increase as a bad thing; it is a market share issue.

### Question 4

You started your talk today by introducing yourself as a capitalist. Throughout the presentation, you mentioned the different scales at which ecosystem services need evaluations. I am struggling to reconcile the way in which the place and ecosystem specific evaluations get to a high scale with green accounting across countries. Can you speak further on how to reconcile the tangible local level to the scale at which you are addressing with this new paradigm?

MR. SUKHDEV

- There are issues with the conversion to the policy level, but it is taking place. When national accounting exists, say for Indonesia, water quality and soil erosion will be included when reporting on deforestation.
- In India, there are agencies left over from the British Empire who are charged with data collection. We wanted to calculate flood loss as compared to deforestation. In 55 years, we were the first people to ask the agencies for their data! You see that it is likely that the information already exists; we just need to do something with it. If you look at ecosystem services and the forest services lost during deforestation on a local level, you can then extrapolate to the economic level and get an image for nation as a whole. Certainly, there are not measurements like this everywhere in India, but there were enough to get a good picture for the nation.
- The fact that InVEST exists can help create a national picture. There is a tendency to start believing in and managing what you measure, so it is important to measure on the ground at the local level.
- The Economics of Ecosystem and biodiversity (TEEB) studies are supposed to ensure enough data exists so that the national accounting framework has enough data to do proper calculations.

### Question 5

The kind of approach you are talking about is one that demands poor people to submit to an accounting system that is inherently modern in order to determine how they derive livelihood from nature. This will lead to them being "managed." Poor people who are traditionally not well represented are not measured or accounted for - this kind of empire governs through creating standardized people. Have you reflected on that?

MR. SUKHDEV

- I have mixed feelings and I assure you it is not something we ignore. There are impacts to the poor that we need to capture and asking them may be the only way. A great deal of their income comes from nature indirectly or directly. In Brazil, Indonesia, and India, three different estimates said that typically 10-20% of gross domestic product (GDP) is dependent on ecosystem services. In reality if you look at those populations and what they are earning, the total mix of villagers and forest dwellers derive 50-90% of their income directly from nature. We need to get the calculations at the state and community level to show the importance of nature. That requires meeting with elders and asking what the relative importance of ecosystem services are for their communities.



You can involve the local community to estimate their values. It is difficult, nothing I have shown is easy, these are complex problems and you need to address them.

- We did have a proposal to do this, but it was rejected for not being big enough and not having enough science. The whole idea of measuring poor GDP, involving them, using it, and making policy changes to see its success, has to be the way forward. Sadly, at a national level, the aggregate is fine, but poor countries know that aggregate GDP is wrong. The sooner we start funding research in this arena, doing the research on the ground, and helping countries build up the information, the sooner we can move forward.

## Question 6

Your new book uses 2020 as the target year. What factors make you think that it is the right timeframe for changing corporations?

MR. SUKHDEV

- The argument behind the book is that we have a lot to change in the next ten years. TEEB came along and my time has not been mine for the last three years; now, I think we have another ten years to make changes, make advertising ethical, and replace antiquated profit obsession with a resource conservation obsession. I think we have ten years to get this all going and Corporation 2020 captures it.

## Question 7

At one point, you mentioned the changes that need to occur in our education system and about getting this information into textbooks. It seems to me that we need to change how we teach economists since they are shaping policy. They are the same ones from forever. How do you change that mindset while our business schools keep turning out the same graduates?

MR. SUKHDEV

- The leaders are also getting wise. There is recognition that the old thinking is no longer working. We have been through four recessions recently and they are all the same version of the other. If you look at some of the recent stuff coming out of the World Bank, which is a complicated beast, you can see the shift happening. Within the World Bank, there are enough voices of reason. They support old thinking, but within that, there is some new thinking going on:
  - In TEEB, we incorporated information from Wealth of Nations to create some decision-making criteria for lending.
  - The International Development Bank asked me to develop a strategy that looks at social capital. They want to allocate a chunk of their lending pot to developing a green economy.
- In general, we use whatever means we can. We keep feeding people who are positively inclined to accept, and that is all you can do.
- With regard to education, it is a slow course, but it has to start now. I am pleased to announce that Yale is starting a TEEB course next semester with an executive level TEEB course to come later. The course is to be offered as a bridge course between the business, management, and environment schools.

## Question 8

Increasingly, China is outpacing the traditional banks in terms of financing and resource development, particularly in developing countries. What points of potential influence do you see there? China seems to be getting more progressive in incorporating these concepts at home, but less so in their work in Africa and South America.

MR. SUKHDEV

- I recommend thinking of China as two systems at work simultaneously. GDP drives the brown economy. If GDP stops growing, China could suffer chronic unemployment, which is political death.
- At the same time, China needs to create a different game, which is the green economy. Fourteen million Chinese have solar water heaters; they are. China is 60% of the solar water heater market and they will sweep the marketplace because they have economies of scale of which we cannot even dream. I am sure they will think of technologies that will help them. Think of China as 1.4 billion people on a speeding train that is about to crash and at once, all of them jump to a slower moving train that is headed to a better place. The slower moving train is the green economy.
- Resource extraction is part of the brown economy (the speeding train), some places it has aspects of green. China is in a resource scramble; they are that largest purchaser of land in other places. They are developing a monopoly on magnets. In a way, this is smart for them because they have such economies of scale, but there are also political downfalls to this land grab. This is an important philosophical question – how did the British Empire give way to the American Empire so seamlessly? China wants to do that.



## Question 9

When you identified opportunities, you highlighted the need to support how we use ecosystem services and the need to develop the ability of policy-makers to use ecosystem services valuation. What is the need and how do we move in the direction to support decision-makers to use this type of information?

MR. SUKHDEV

- We need to get national accounting in the same framework, but we also need it at the ground level. How does a province work towards getting a value for preserving ecosystem services? How does it work with the finance ministry at a national level? A lot of state-centered or province-centered appreciation has to happen.
- There is also a lot of room to solve local problems with local solutions. Maintaining a swamp as a cost-effective natural sewage treatment facility is a domestic example that would not have happened if the economics were not highlighted and brought to the table. Today I think you will find many people desperately trying to get numbers to justify next year's budget.
- Capacity building is the biggest opportunity. How do you provide respectable information to help decision-making? A lot needs to happen to build capacity.

## Question 10

When you mentioned TEEB in Brazil, who would you work with in the country? There is a lot happening in Brazil with REDD+ and in the state of Acre, their laws stipulate payments for ecosystem services. What are they hoping to get out of it?

MR. SUKHDEV

- Interest for a TEEB-Brazil came from the national level because they knew they needed to display it nationally to gain support. São Paulo is starting, Amazonas now wants to go ahead with it, Tocantins also, and as of two days ago, Rio de Janeiro is interested as well.
- TEEB for business has strong backers in Brazil; Ventura and Vale are interested. Brazil is a good example, but I am worried about the complexities. They will need to coordinate the effort to avoid having different states using different templates. It will need to be connected at the national level. There is a need for strong coordination.

## Question 11

Ecosystem services come in many different flavors some of which are quantitative others are qualitative. How can we empower decision-makers to deal with the asymmetry as it lends itself to a broader determination of value? How do you manage that complexity?

MR. SUKHDEV

- The complexity is there. Some ecosystem services are "easier" to value than others are, but you also have additional dimension such as the scales at which they operate. For instance, you may have a coral reef that provides sustenance for the local community and therefore has high local value. The same coral reef may have value nationally because it brings tourism to the country. It then also has international value because tourists travel from all over the world to get to the reef.
- The local community can address the local need. We can help by defining what needs to happen. We need to define the benefits that flow at the local level and connect them to the national level. We need to escalate scales of understanding otherwise, we are not optimizing the potential. You need to do what you can to empower people so they can push along the axes (horizontal and vertical).
- REDD+ will not succeed as a pure carbon scheme or a pure forestry scheme. It will not deliver enough value unless it operates on a multi-dimensional basis. It needs to have an understanding that there are different levels of value (local, national, etc.). Agriculture surrounds the forest and it is silly to worry about what happens in the forest and not care what happens right next door. REDD+ needs to utilize an integrated landscape approach. Forests provide many other services besides carbon sequestration. You need to make sure the legal architecture is strong enough to attach these other things to REDD+. There is no option but to recognize the matrix of the layers.



## Question 12

Do you see any opportunity from the current European debt crisis to leverage those countries to encourage transparent accounting?

MR. SUKHDEV

- We derailed the report to allow people to understand the linkage between the recessions. Why do you want an economy that is missing natural capital and lacks complete accounting? Our current style of an economy increases the risk of climate change and does not improve wellbeing. By definition, the only viable economy is the green economy.
- The political mandate to invest is there and it has to be in greening the global economy. Korea invested in greening their economy and so did China, but few others rose to the challenge. Europe said it had already done it and the U.S. invested only minimally. Out of US \$2.5 trillion of investment, less than US \$450 billion went towards developing a green economy. From our estimates, nearly double that investment is needed to make any change.

## Question 13

When thinking about TEEB's strategy and its diffusion, I think of it as a viral strategy, but not in the internet sense. With TEEB, you created five different reports for different sectors. You created the DNA and now you want it to explode out that way. How will it be possible to take these ideas and infect the institutions you need to infect? You have a good list, but how do you do it?

MR. SUKHDEV

- That is a perfect description. That is what we have done; we have created a virus. The last types of accounting came out of the UK. We created a demand for new accounting legislation. We provided packets of information to the early adopters and in turn, others follow by taking the ideas. We have gone from push factor to pull factor.
- Two people have put together ideas for and TEEB-Agriculture, which is necessary. India and Georgia need support for a business TEEB.
- There is clearly huge potential impact for those interested in funding this work. There is now a TEEB secretariat in Geneva to help keep this community going. Hopefully it can act as an honest broker because TEEB is a public good.

## Question 14

What about global consulting firms? Are they a channel?

MR. SUKHDEV

- Yes, two companies in particular are executing studies. PricewaterhouseCoopers (PwC) has done carbon calculations and True Cost has done fresh water calculations.
- This diffusion is happening on the business side as well, which we should encourage. Deloitte is another company, although they are a little behind PwC and True Cost.
- We are providing the innovation and the ideas and they are putting together the spreadsheets.

## Question 15

What is the insurance value of the TEEB approach for insurance and reinsurance agencies interested in accounting methods? For instance, FEMA is now considering natural capital in their accounting.

MR. SUKHDEV

- I think this is interesting. Regulation does not point out the problems.
- If you look at the spill in the Gulf of Mexico, there was no such thing as an ecological risk calculation. BP posed a big risk. In other situations, we conduct risk calculation, but in these types of scenarios, companies do not conduct the typical risk assessment.
- I think that it is important that insurers start asking for this type of information. They should start to ask for assessments of ecological risk. What are the dependencies on a long-term basis for managing risks? Risks of water scarcity or phosphorus scarcity? There is not enough of this going on now, but it should move in that direction soon.
- The WeatherBill focuses on providing insurance for those in areas where the risk from weather and/or climate change is high.



## Question 16

What do you think are the most effective mechanisms for non-market ecosystem services?

PARTICIPANT

- Up to now, the conservation community has predominantly invested in preservation activities. At a minimum, there is leakage to climate change and other areas of scale. Now we are beginning to grapple with transforming markets through certification mechanisms. The effort aims to combine non-market values with eco-labeling. It is really in its infancy and PES is a long ways away from satisfying it.

PARTICIPANT

- Part of the solution, in my mind, is to transition out of the preservationist view and work in a way that creates working landscapes where people can live. The land trust community has been pitching this idea the U.S.
- I work in urban landscapes, which are often considered dead zones for environmental attributes. Rio de Janeiro is in the process of redeveloping 45,000 hectares within its city boundaries. They have been considered dead zones and by including people in the equation, you start to develop cultural, spiritual, and recreational values. Those are not the only non-market values we are talking about either. It comes with an enormous amount of effort. People do not always share the same values and you need to empower those communities to communicate them.

PARTICIPANT

- Not an answer but my observation is that many of the cases offered as examples are bilateral cases. Take drinking water, which is a commodity and a natural resource. Sedimentation can make life difficult for a water utility in terms of reservoir management. There has been action, but so far, it has been geographically specific or when a utility has been forward thinking. There are some examples, but not many. Why does this not happen more frequently?
- Yesterday someone from U.S. Forest Service offered to put a fee on all water usage in California. This fee would then generate a pot of money to support upstream processes and improve stream and river health. A small fee on all water users in California would generate a lot of money.

MR. SUKHDEV

- That is not a new idea. In Japan for instance, they have almost 60% forest cover and a forest tax to manage it. The forest is too old and too weak to support sustainable logging and the forest needs maintenance. Through dialogue with the community, they established a local tax to pay for the forest's upkeep and maintenance. As a culture, they believe this is a necessity.

PARTICIPANT

- There is potential to connect people to their natural resource base. You can be a community like a fishery where institutions emerge to protect the resource. They agree to leave fish in the water because it is money in the bank for them in the future. You have many urban poor who experience natural resources but do not make the connection. If you bring business to work together with the community, there is so much potential.

## Question 17

What is motivating corporations? Economists have always said that innovation and technology will solve problems. Is there a limit to innovation? Will the cost finally get too high? Are some companies just doing it because it is a good thing to do, while some are just doing it to lead the pack? What is that motivating piece? That piece still gets me.

PARTICIPANT

- Companies are starting to worry about the sustainability of their supplies either because they have a stake in a long-term resource (logging) or because they need the source immediately (water and Coca Cola). As they learn about it, the companies get smarter.





## Question 18

What kinds of internal situation logic of corporations are out there? Where are the promising places to look for the initial adoptions? What sections are more vulnerable to this viral infection?

MR. SUKHDEV

- This is really the central question of “where can we drive change?” PUMA made a big splash by being the first to map out their externalities. Similarly, Nestlé is pulling the plug on spending contracts. Our general concern is that this is too much of an evangelical effort that few people are doing the right thing. It takes time. We need to create that fabric of change.
- At one level, you have a gutsy CEO dropping the leading palm oil producer because something clicked - good old shame. The dinosaur corporation needs to get out and we need to bring in the nimble mammal corporation.
- The Equator Principles were created through activism and irritation. Every week there would be some new nongovernment organization (NGO) asking for an investment. This represented risk and the Equator Principles were developed as a way to deal with the risk.
- FSC certification is consumer-driven. If you go back to the origin, it seems that public pressure drove the change. In addition to the public and consumer pressures, there is a leadership component. Leadership responds and the response may not be favorable, but that no longer seems to be the case.
- Consumers are also changing. They are not satisfied by price. Now, they want to know from whom they are buying, what the social and environmental implications are, etc.
- This next generation is part of it. They are amazing and will be a huge driver.