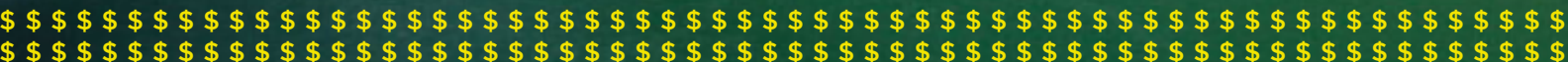


BANKING ON NATURE





A Brief History of Natural Capital

By

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How far have we come, and where do we go now?

Nominal GDP has increased globally a hundredfold since the 1940s, when the present system of national accounts was created by economists Richard Stone and James Meade. But this has not come without a price. The world's forests have shrunk to half their size and environmental pollution has increased manifold.

The System of National Accounts and its bellwether indicator, gross domestic product (GDP), have together proved an antiquated compass for steering our economies. This has resulted over the years in policy failures, as the compass does not tell us whether our resources are scarce or sustainable, whether the quality of life has improved along with GDP growth or not, and so on. It does a very poor job of measuring what matters. There have been persistent efforts over the last two decades to reform our national accounting system through "green accounting" or "inclusive wealth" measures. It is expected that one of these new measures will finally provide a yardstick for sustainable development. These improved measures of national performance will also reflect our institutional and political commitments through the Agenda 21 document "Our Common Future," an outcome of the 1992 Earth Summit at Rio, and "The Future We Want" document accepted at Rio+20 in 2012.

The effort comes not a moment too soon. The United Nations is now formulating Sustainable Development Goals starting in 2015 with the expectation of being able to compare how the world responds to sustainability targets. Fixing the accounts of society so that they measure what matters becomes even more crucial in this context.

Better indicators for economic welfare have been sought as far back as the 1960s. William Nordhaus and James Tobin proposed alternative indicators in 1973, while Herman Daly and John Cobb proposed an index of sustainable economic welfare in 1989. Pioneering efforts to compute alternatives have also been made by statistical agencies in the Netherlands and the Philippines. The United Nations Statistics Division (UNSD) and World Bank developed a framework for a satellite accounting system in the early 1990s, resulting in the publication of a handbook in 1993 that has since gone through a number of revisions.



Some progress is being made. Efforts to green national accounts are now underway in many countries, including Australia, Austria, Canada, Denmark, Finland, France, Germany, Italy, India, Netherlands, Norway, Sweden, the United Kingdom and United States.

In 2008, Nicolas Sarkozy, president of France at the time, set up a Commission on the Measurement of Economic Performance and Social Progress, headed by economists Joseph Stiglitz, Amartya Sen and Jean-Paul Fitoussi. Their prime mission is to identify the limits of GDP as an indicator of economic performance and social progress. The commission's mandate is also to assess the feasibility of alternative measurement tools, and to discuss how to present such statistical information in an appropriate way.

At the same time, there is a significant global effort underway to build a partnership among countries interested in including natural capital in their national accounts. The initiative was announced at the COP-10 meeting in Nagoya, Japan, in 2010 by World Bank president Robert Zoellick. Christened WAVES, which stands for Wealth Accounting and the Valuation of Ecosystem Services, the goal is to develop guidelines for ecosystem accounting. Several developed and developing countries are part of this initiative, including Australia, Botswana, Colombia, Costa Rica, Madagascar and the Philippines. WAVES partners also include several UN agencies, such as UN Environment Programme (UNEP), UN Development Programme and UNSD, as well as non-governmental organizations and academic institutions.

In May 2012, in the run-up to Rio+20, Botswana President Ian Khama hosted a summit of 11 African nations to discuss the significance of natural capital to their respective countries. No less than five African heads of state attended this meeting in person. The result of this gathering was the Gaborone Declaration, which committed this group of African first-movers to including natural capital in their national accounts. The document sent a powerful political message during Rio+20 negotiations. It told the world that these African nations were not only aware of the importance of natural capital, but also willing to do something about it.

Also at Rio+20, the World Bank and its partners initiated the "50/50" campaign, inviting the public and private sectors to join forces in support of natural capital accounting. The response was overwhelming: 62 countries, 90 corporations and 17 civil society members signed up. UNEP and the United Nations University added momentum to the discussion with the release of their Inclusive Wealth Report, a ground-breaking document that measured the change in man-made capital, natural capital and human capital for a

selection of 20 countries over the last 18 years. Although Rio+20 has been criticized as an underwhelming event, it was clearly a success for efforts to boost acceptance of natural capital accounting.

In a related sphere, Rio+20 also saw considerable interest and cohesive action to initiate a parallel process by which corporations could begin to measure and report their own impacts on natural capital. Apart from the obvious dependencies of some business sectors on nature – tourism, agriculture, forestry, fisheries and pharmaceuticals, to name a few – the world of business also has significant impacts on the natural environment.

These are the so-called "externalities" of business, including greenhouse gas emissions, freshwater extraction, pollution and waste. A recent 2011 estimate of the economic size of these externalities was as high as \$2.15 trillion (U.S.), or 3.5 per cent of GDP contributed by just the top 3,000 listed companies in the world. You can't manage what you don't measure, and at present there is

very little measuring or reporting on natural capital going on in the corporate world. Guidelines and standards are urgently needed to help corporations integrate natural capital metrics into their statutory reporting process, which is at present limited to just financial accounts. "Mainstreaming" these issues can only be achieved if mainstream analysts and investors discover sustainability information as part of the annual reports they read and respond to with ratings and market actions.

Meanwhile, the UNSD has improved guidelines for reflecting natural capital in national accounts. The latest version of the internationally accepted standard for how one counts natural capital and ecosystem services, the

System of Environmental-Economic Accounting (SEEA), was updated in 2012. It prescribes ways to reflect the market-priced value of nature's goods and services in national accounts. But this is not new. What is new is that it also provides experimental accounting guidance to reflect the values of non-market goods and services, such as freshwater and nutrient cycling and pollination. It also sets out monitoring and analytical approaches that countries can follow, and suggests ways for such data to inform policy.

Can the leading nations accomplish much of this accounting advancement by 2015, when the UN's Sustainable Development Goals will signal a new phase of sustainable development? The jury is out on this question. But if five or 10 leading nations from both developed and developing worlds can focus their collective efforts, there is no doubt that these trailblazers can be ready in time with national accounts that actually reflect development's biggest asset: natural capital.

If they succeed by 2015, we would all have cause to celebrate the arrival of a brave new world. 🌱



Top 10 Natural Capital Superpowers

By Tyler Hamilton

If all countries began calculating their stocks of natural capital and counting the value of these resources in their national accounts, who would be the richest of them all?

Corporate Knights analyzed 2008 data compiled as part of the Inclusive Wealth Report 2012, a joint initiative of the United Nations Environment Programme (UNEP) and the International Human Dimensions Programme (IHDP), to identify the world's natural capital superpowers.

We found that only 10 countries made it into the Trillionaire's Club, which requires that the values attributed to agricultural land, forests, fisheries, fossil fuels and minerals add up to more than \$1 trillion.

On an absolute basis, Russia topped the list with a natural capital inventory valued at \$6.86 trillion, the majority of which comes from its vast reserve of fossil fuels. The United States came a close second at \$6.62 trillion, followed by China, Canada and Saudi Arabia (see chart on next page).

Per capita, however, the numbers tell a different story: Canada comes out on top, followed by Saudi Arabia and Australia. Natural capital adds \$103,439 to the total wealth of every Canadian, \$103,204 for Saudis and \$84,464 for Australians. Compare this to heavily populated India, which on a per-capita basis lands at the back of the pack. At \$1.58 trillion, it has nearly as much natural capital as Australia, but less than one-sixtieth of the natural capital wealth per capita.

Even more telling is when we shift the spotlight to the rate at which countries in the Trillionaire's Club are depleting their natural capital. Here, Australia and Germany show the sharpest declines between 1990 and 2008, with natural capital stocks dropping 8.5 per cent and 8.2 per cent respectively. The two countries with the smallest declines are, surprisingly, Saudi Arabia, at 1.35 per cent, and Venezuela, at 2.58 per cent.

It's important to note that these are

crude numbers. As one national statistician told *Corporate Knights*, "There are lots of things about these data that I find wonky." For example, Saudi Arabia is shown to have eight times the value for its agricultural land than Canada. It partly comes down to what numbers each country provides to those collecting the data. According to the World Bank databank, the Saudis submit that 81 per cent of their country is agricultural land. It's a dubious claim for a largely desert country. Also suspect is the high value placed on U.S. fossil fuel stocks. "The value for coal in the U.S. is surely exaggerated," said the statistician.

The World Bank did its own tabulation of natural capital for 152 countries as part of its Wealth of Nations report. The values, for each of 1995, 2000 and 2005, vary substantially compared to data in the Inclusive Wealth Report. Both reports also exclude values for renewable natural capital such as wind, solar, geothermal and hydroelectric resources.

"These are still early days for wealth accounts," said University of Cambridge economics professor Partha Dasgupta, science advisor to the Inclusive Wealth Report. He said every new economic indicator has some rough edges in the beginning. "Just ask yourself what GDP estimates were like back in the early 1950s."

Dasgupta explained that the inclusive wealth and World Bank reports used different shadow prices for carbon and timber, which partially explains the differences in natural capital values. Shadow prices are values assigned to a resource, good or service where market prices are not available for guidance. They are, in other words, mathematically determined estimates that depend on the data put into them.

Renewable energy sources were excluded by both reports because, again, economists are still trying to figure out how to properly account for them. "These


are components we hope to include as we progress," said Anantha Kumar Duraiappah, executive director of the IHDP. "But the methodology first has to be worked out as it's not as simple as just adding them up."

He said they have to take into account what's involved in the conversion of these renewable energy sources through produced capital, such as solar panels, hydroelectric dams and geothermal plants. "And again, the shadow prices of these will have to also be worked out to ensure we are not double counting," he added.

But even if they're still a work in progress, the numbers do provide a good sense of which countries are on a more sustainable path. For example, looking at natural capital stock between 1990 and 2008 reveals that Saudi Arabia's per-capita natural capital plunged 39 per cent even though the stock itself fell only 1.35 per cent. Chalk that up to a dramatic increase in population over the past 20 years.

Seven of the 10 countries in the Trillionaire's Club, including the United States and Canada, saw per-capita drops of 20 per cent or higher – the effects of growing populations and depletion of non-renewable stocks. Russia, on the other hand, only dropped 2.67 per cent because its population has actually fallen by about six million since 1990.

It would be a stretch to say that this makes Russia the most sustainable when it comes to management of its natural capital, but for those who manage the natural resources of their respective countries, these serve as instructive data points that provide a much more detailed perspective.

"[The fact] that wealth proves to be difficult to measure isn't an argument for not estimating it," said Dasgupta, calling efforts that have been made to date the first steps of a lengthy but necessary project. 







The Trillionaires Club

Top 10 Natural Capital Country Leaders

(Based on data in Inclusive Wealth Index on 20 countries representing 73% of Global GDP)

Rank	Country	Natural Capital (\$) 2008	Natural Capital (\$) % Decline (1990-2008)	Natural Capital (\$) per capita 2008	Per capita % decline 1990-2008
1	Russia	6,856,502,000,000	-6.01%	47,893	-2.67%
2	United States	6,621,602,000,000	-3.71%	21,711	-20.02%
3	China	5,072,761,000,000	-4.17%	3,819	-17.37%
4	Canada	3,447,416,000,000	-3.71%	103,439	-19.96%
5	Saudi Arabia	2,700,510,000,000	-1.35%	103,204	-39.15%
6	Australia	1,817,120,000,000	-8.50%	84,463	-27.29%
7	India	1,584,404,000,000	-5.93%	1,330	-31.02%
8	Brazil	1,390,147,000,000	-4.52%	7,258	-25.40%
9	Germany	1,211,377,000,000	-8.20%	14,688	-11.96%
10	Venezuela	1,130,499,000,000	-2.58%	40,292	-31.65%
	TOTAL	31,832,338,000,000			

Natural Capital by Resources

Country	Ag land \$ 	Forest \$ 	Fossil fuels \$ 	Minerals \$ 
Russia	170,363,000,000	2,268,376,000,000	4,346,947,000,000	70,816,000,000
United States	1,002,242,000,000	2,425,454,000,000	3,147,142,000,000	31,131,000,000
China	2,422,864,000,000	989,830,000,000	1,584,641,000,000	75,426,000,000
Canada	30,740,000,000	1,865,803,000,000	1,538,956,000,000	11,697,000,000
Saudi Arabia	223,044,000,000	307,000,000	2,477,159,000,000	n/a
Australia	397,358,000,000	214,990,000,000	1,124,994,000,000	79,578,000,000
India	525,185,000,000	75,037,000,000	936,238,000,000	47,943,000,000
Brazil	253,972,000,000	946,450,000,000	146,330,000,000	43,395,000,000
Germany	33,096,000,000	90,779,000,000	1,087,502,000,000	n/a
Venezuela	187,482,000,000	55,549,000,000	877,222,000,000	10,245,000,000
TOTAL	5,246,346,000,000	8,932,575,000,000	17,267,131,000,000	370,231,000,000



Sleeping Green Giants

Current measures of natural capital don't yet include renewable resource capacity, hiding a key comparative advantage as the world transitions to a clean energy future.

By Mark Anielski

Countries that choose to optimize the natural benefits of their renewable energy resources in the 21st century will have a comparative advantage over nations that don't.

Natural capital leaders will also be defined as those that minimize their ecological liabilities, such as the carbon liability imposed by the use of non-renewable fossil fuels. They will be nations that position their ecological footprint in harmony with the biocapacity of their natural assets and transition away from their historical dependence on non-renewable energy – coal, oil and natural gas.

Who are the world's top natural capital superpowers? The most recent estimates place Russia, the U.S., China, Canada and Saudi Arabia at the top in terms of the value of their respective natural capital assets (see ranking on previous page). These assets include the value of agricultural lands, forest

resources, oil, natural gas, coal and minerals, and they make a significant contribution to the annual GDP of nations. For example, Canada's natural capital resource industries contributed about 10 per cent to the country's \$1.5 trillion GDP in 2011. The agriculture, forestry and mining sectors (including oil and gas) generated a 4.3 per cent return on the estimated total natural capital asset value of Canada, which is roughly \$3.5 trillion.

Missing from such estimates, however, are the carbon liabilities and other ecosystem service losses imposed on the planet. Countries with a higher percentage of their natural capital from oil, coal, gas and bitumen resources are more vulnerable due to higher associated environmental damages such as the social impact of carbon on society. According to the Inclusive Wealth Report 2012, the annual carbon damage costs associated with greenhouse gas emissions from non-renewable energy use vary from \$1.36 billion for Canada, to \$2.57 billion for China, \$22.5 billion for India, \$32.8 billion for the U.S., and up to \$51.68 billion for Germany. These costs should effectively be deducted from each nation's GDP figures to account for natural capital depreciation costs.

Also missing from these natural capital estimates is the societal value of renewable or clean energy potential or their opportunities for development. The World Bank has looked into how much solar, wind, hydro, geothermal and biofuels contribute to the natural capital of nations. Monetary estimates of renewable energy capacity and associated infrastructure are not available. Still, it is possible to assess the importance of a nation's annual renewable energy capacity relative to its current energy demand.

Let's look, for example, at the world's Top 10 natural capital superpowers. The U.S. and China, the world's largest energy consumers, have sufficient renewable energy potential to more than offset or replace their current annual energy demands. Australia, Brazil, Russia and Canada are in an even more favourable position with sizable renewable energy potential far exceeding their current energy demands from conventional sources. Germany is the most vulnerable of the 10. It has insufficient renewable energy potential to offset its current energy demands.

While these results do not suggest perfect substitution of non-renewable for renewable options, they are encouraging. They suggest that the most important natural capital superpowers, in terms of both natural assets and carbon emissions and related carbon damage costs, could begin to transition to a clean energy future that would be less carbon intensive and have lower carbon damage costs.


Moreover, from a natural capital asset accounting basis, these renewable energy assets, properly maintained, would provide a sustained benefit stream and mitigate the vulnerability from declining and more expensive stocks of finite non-renewable sources. Development of these renewable energy options would also contribute to employment in the renewable energy sector. In addition, society would save billions of dollars in foregone carbon damage costs and other ecological service damages that would result from continuing to burn coal, oil and natural gas.

Countries, in other words, that capitalize on their renewable and clean energy potential will clearly enjoy a comparative advantage over nations that don't, both in terms of economic prosperity and quality of life.

Annual Energy Demand and Renewable Energy Capacity of the Top 10 World's Natural Capital Superpowers

(million tons of oil equivalent), 2007

Country	Annual Energy De-	Solar	Wind	Hydro	Geo-thermal	Bio-fuels	Total Renewable Energy Capacity	Ratio of Renewable Capacity to Current Energy Demand
Russia	617.8	423.2	76	133.6	57.1	1,245.6	1,935.5	3.13
United States	2290.4	340	157.3	42.3	13.9	2,251.0	2,804.5	1.22
China	1228.6	149	304.6	153.6	16.6	647.0	1,270.8	1.03
Canada	250.0	212	129.1	76.1	3.9	481.3	902.4	3.61
Saudi Arabia	126.4	87.8	0	0	0.1	-	87.9	0.70
Australia	112.7	324.9	76.2	2.4	1.1	871.7	1,276.3	11.32
India	538.3	106.4	23.8	52.8	0.1	326.4	509.5	0.95
Brazil	190.7	340.6	8.8	119	0.3	757.3	1,226.0	6.43
Germany	346.4	7.1	5.1	2.1	0.4	44.8	59.5	0.17
Venezuela	54.0	36	3.9	20.9	0	81.8	142.6	2.64

Another natural comparative advantage of nations is their ability to live a good and sustainable life within the natural biocapacity of the land. The following table compares the Ecological Footprints (in hectares per capita) relative to the available biocapacity (hectares per capita) for the Top 10 natural capital superpowers. The last column shows whether the nation enjoys an ecological reserve (surplus) or an ecological deficit. The results show that Canada, Australia, Brazil and Russia all enjoy relatively healthy ecological surpluses; that is, the current household demands on nature's natural assets is well within the limits of nature's capacity to provide energy, food and materials for current consumption. The U.S., China, Saudi Arabia, Germany, India and Venezuela all live with an ecological deficit. Moreover, from a natural capital asset accounting basis, these renewable energy assets, properly maintained, would provide a sustained benefit stream and mitigate the vulnerability from declining and more expensive stocks of finite non-renewable sources. Development of these renewable energy options would also contribute to employment in the renewable energy sector. In addition, society would save billions of dollars in foregone carbon damage costs and other ecological service damages that would result from continuing to burn coal, oil and natural gas. Countries, in other words, that capitalize on their renewable and clean energy potential will clearly enjoy a comparative advantage over nations that don't, both in terms of economic prosperity and quality of life. 

Footprint, Biocapacity and Ecological Reserve or Deficit of the Top 10 Nat Cap Superpowers

Country	(ha/capita)		
	Ecological Footprint of Consumption	Bio-capacity	Reserve/Deficit
Russia	4.41	5.7	1.29
United States	8.00	3.9	-4.10
China	2.21	1.0	-1.21
Canada	7.01	14.9	7.89
Saudi Arabia	5.13	0.8	-4.33
Australia	6.84	14.6	7.76
India	0.9	0.51	-0.39
Brazil	2.91	9.0	6.09
Germany	5.08	1.9	-3.18
Venezuela	2.89	2.8	-0.09

The Full Math Around Outsourcing

When a job is outsourced overseas, demand on water and energy resources goes with it. Often forgotten is that one country's job loss could also represent a big natural capital gain.

By Assaad W. Razzouk

Natural capital, which ought to be scientifically measurable and systematically analyzed, is neither taken into account in the public debate about outsourcing, nor factored into the accounting industry's "true and fair value" approach to financial statements.

The upshot is that outsourcing is not what it seems, and we lack the information to have a proper debate about it.

I was in Beijing in late January and the environmental catastrophe there was plain

to see: No visible sky, deadly pervasive smog, pollutant indices off the charts, people going about their business wearing masks and the local media up in arms. At the time, 103 neighbourhood factories faced mandatory shutdowns to combat severe health hazards.

This is the forgotten impact of outsourcing jobs to China.

It has become conventional wisdom that jobs outsourced to emerging markets such as India, Mexico, the Philippines and China are a terrible thing for the economies "losing" these jobs. Politicians and pundits in the U.S., U.K., Canada and elsewhere score points with the public by accusing their rivals of outsourcing jobs overseas. Outsourcers are demonized in news stories and their headlines.

It is true that when a job moves from, say, the U.S. to China so that goods and services can eventually be exported back to the U.S., it results in a manufacturing job loss for America and a manufacturing job gain for China. But this is a simplistic way of looking at the benefits and losses from such an exchange.

For instance, it doesn't take into account the amount of water or energy consumption that is shifted to China from the U.S. It also doesn't account for the resulting pollution, which Chinese citizens are increasingly aware of and, in some cases, protesting loudly. Tied to this is the rising health-care costs shifted from the U.S. to China because of pollution-related illnesses.

In other words, while the U.S. may have "lost" a job and India or China may have

"gained" one, the picture is incomplete unless natural capital is fully factored into the calculation. Done correctly, that math presents a completely different picture: The economy that "lost" jobs through outsourcing would also be seen to have shifted massive health-care liabilities to the country that gained jobs, while banking large savings from reduced water and energy use.

Looked at from this perspective, outsourcing contributes to the impairment on the economies gaining jobs and to a benefit for those losing jobs. Potentially, savings achieved by losing an energy- or water-intensive job could outweigh the economic contribution of the lost job. Those savings could then be reinvested in higher value-added employment opportunities with much enhanced natural capital footprints – clean energy production is one example.

On the other hand, under current accounting rules the Chinese company benefiting from the outsourced American job may be profitable on paper, even if it is polluting the air, water, ecosystems and forests, as well as affecting the health and safety of thousands, even millions of people.

Current accounting standards, in other words, are ignoring natural capital. In doing so, they are masking a complete picture of corporate profitability, and as a result are misleading shareholders, investors and the markets, not to mention perpetuating a debate about outsourcing based on myths and incomplete information. 