It’s an honor to be here. Hello everyone, friends, especially those friends who are online watching this program.

I have been given the topic of green economy for rural prosperity or shared prosperity. My three ideas are: Number one, why we need green economy – why we need what we need. I mean, green economy: what is the rationale? Second, if we want to achieve green economy or elements of green economy, what are the building blocks where we have to focus? I will talk about indirect drivers of change. And finally, if we really want to achieve green economy, what are the indicators? Especially the compass of the measurement of progress and welfare, where we need some attention.

I’m not going to give a definition of green economy, but to share some stories. Basically, the development paradigm, or economic science, says that elements of natural capital, or natural resources – they are part of production and consumption. That means their relative worth or scarcity values would be reflected through the pricing or the cost, and people will be using them as per their relative value. That also means, alternatively, that if you pay for something, you get something. If you don’t get something, you don’t pay for it. That has not happened, if you see the broad picture of the last 30–35 years. Three broad macroeconomic aggregates – GDP, for example. GDP has gone up by eight to nine times in purchasing power terms during 1980 to 2013. Eight times. Investment, it has gone up by nine times. I’m not giving you the big, big numbers, just the broad trend. So GDP went up during 1980 to 2013 by eight times; investment by eight times; trade in terms of volume by seven times.

Of course, population, the number of Homo sapiens, has also gone up. In 1980, we were at around 4.4 billion. Now we are around 7 billion plus. In terms of per head trade volume and per head GDP, we have gone ahead and we have made good progress.

But the same, if you see the natural capital or ecosystem services, it has gone down. Around the same period, ecosystem services have gone down. That’s what the Millennium Ecosystem Assessment said: that 60 percent (for the same period) ecosystem services have declined. We are pumping 33 billion tons of carbon. We don’t have a kind of list of endangered species on a coherent yardstick, but this endangered species list is increasing in every assessment for the same period if you take for every five years. That means that there is something wrong somewhere. That the kind of natural capital which is feeding the development process and growth is not being recognized. This integration, this main instrument, is one of the cornerstones of the green economy effort.
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Story number two, we are talking about climate change. As you know, the [IPCC] assessment has come out and there is some literature and assessments coming from individual scientists from all over the world: that out of seven billion people, the top three billion in terms of income are responsible for 50 percent of emissions. Fifty percent by the top three, and the bottom three billion – 5 percent. Out of that three billion, 1.3 don’t have even access to basic fossil fuels. And out of that 1.3 billion, less than 800 million, they are living the life of pre-Industrial Revolution. All of us will be affected by the impact of climate change, that’s true, but tragically those 1.3 billion people, or three billion people who are in the lower bracket of income, they will be affected more than anyone else, because they’re more vulnerable, they are poor, they don’t have the safeguard standards. So how to bring those 1.3 billion people in the energy security net? That is one of the goals of the green economy approach.

Let me tell you one more thing. Out of this 1.3 billion people, if you take around 400 million people, the poorest rock bottom, they are the chronic poor. The chronic poor means a person is born poor, he lives his entire life poor, and when he dies he passes the poverty to his kids. It’s a challenging problem, how to pull them up and give them a respectable life? And that is also one of the goals of the green economy approach.

The issue is: what should be the optimal level of economic activities, with respect to the total natural system, where you have a decent life for a large number of the population and certainly those who are underprivileged? That is another goal of the green economy.

Now I will tell you another story. We are talking about the trade-offs. Food security and ecosystem services are one of the celebrated trade-offs. I mean, in many parts of the world, especially in South Asia, Amazonia, sub-Saharan Africa, there are lots of poor people. You need food, right? So the way the Green Revolution brought food security, or at least the kind of food they’re producing, it caused also soil salinity, water logging, mono-cropping. And the challenge is we need food, but how to produce food in a way that ecosystems or resilience of natural capital are not compromised?

I’ll give you the example from the place where I come from, India. Andhra Pradesh is one of the provinces of India. It has around 4.4 million people. In terms of size, it could be like Lebanon or Oregon State here. They also followed the green revolutions. In the 1980s, they started using intensive farming. That means more reliance on chemical fertilizers, one or two crops, more use of pesticides and insecticides. So much so that 35 percent to 40 percent of input cost was only for chemical fertilizers and pesticides.

Of course, the terms of trade were not in favor of agriculture. Agricultural productivity started declining in the ‘90s. Of course, 82 percent of farmers are marginal farmers, and those farmers started borrowing money, from the local lenders or the local banks, who used to charge them astronomical interest rates. So, by 2002, 75 percent of farmers were under debt, under serious stress and depression, and the phenomenon of suicides started happening in that state. And people became very alarmed. There were lots of media reports about that. Some local organizations, NGOs and opinion makers, they realized that, no, we have to do something about it. And what they started doing, they changed the cropping pattern. Through some botanical formulations they started avoiding use of pesticides and chemical fertilizers. And then agriculture was back on track. Not only did it enhance productivity, but the farmers were
not required to take loans and not to suffer all the consequences which they were going through earlier.

In the last four to five years, 300,000 are following organic farming. It’s a success story. More farmers are in the process in other states in India and south Asia, they’re planning to follow them. And that was another story: how the trade-offs can be resolved in a way that secures the future of farmers in terms of income and jobs, and at the same time, it does not compromise the resilience or the health of the natural or agricultural ecosystems in the state. These are the success stories. These are the trade-offs and the path by which to resolve them is one of the backbones of the green economy approach. And that’s why, in a world of growing population, needs, aspirations, high consumption, stressed ecosystems and climate, we need to follow economics, align the wheels of development and conservation in a way that gives a respectable life to people. It has the ability to provide a good livelihood to the poorest of the poor. That is also one of the backbones and elements of the green economy.

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Idea number two: identify, acknowledge and demonstrate the missing links for robust intervention and the response policies. When we talk about ecosystems, natural capital, we always talk about habitat fragmentation or introduction of new species. We talk about climate change. That is true. They are the drivers. But the indirect drivers in terms of governance, costing, pricing, are somewhere else. And people, sometimes they understand, but they are not able to link the two. The examples are plenty.

Exports in aquaculture from Bangladesh or Vietnam are causing damage to mangroves or coastal pollution. Similarly, exports of pineapples from one part of northeast India are causing soil erosion on topsoil. And the examples could be many, like the export of beef causing deforestation. There are enough data.

How to bring these indirect linkages into the discourse of policy formulations? How to capture those costs? How to capture those benefits? And reflect them to the costs and benefits wherever they are? Similarly, we talk about, you know, governance. We talk about institutions. They are also an important part of the indirect drivers. Indirect drivers are something which are in the ambit of the tools and approaches which green economy is trying to recommend. Of course, the rules of the game – investment, selling behaviors, evaluations, exchange rate policies – they have impacts on natural capital. Individual researchers here and there, they have documented it. But somehow, policymakers, they have not been able to understand or at least embrace those linkages. And that has caused a disharmony or a kind of disjoint between the practice of policy and the conservation goals. We need to bring them onto a common table, those two sides.

“Investment, selling behaviors, evaluations, exchange rate policies: these all have impacts on natural capital. But somehow, policymakers have not been able to understand or embrace those linkages.”
The green economy also tries to deconstruct the micro happenings. Sometimes a very sweeping statement is given – a macro – when we talk about the poor and ecosystems, for example. There are views that, okay, incidence of poverty causes degradation. Then some other guys come and say, “no, no, degraded ecosystems cause incidence of poverty.” A third comes: “no, the correlation is spurious. It is the market failure, information failure, government failure which causes the poverty.” Some other guys come, say “no, it is the introduction of a perverse policy which is causing both the poverty and the degradation of ecosystems.” Some other guys come, say “no, it is the market failure, information failure, government failure which causes the poverty.” Some other guys come, say “no, it is the introduction of a perverse policy which is causing both the poverty and the degradation of ecosystems.” Some other guys come, say “no, it is the introduction of a perverse policy which is causing both the poverty and the degradation of ecosystems.”

Macro trends can mask the micro reality. Poverty and ecosystem dynamics need to be understood in the local context. To understand the local context, the dependence, the cultural practices, the social, psychological and other institutional aspects, we have to understand. Only then can a meaningful policy be designed. That is another aspect or element of green economy.

“The way GDP is calculated, it’s no good for saying anything about the duration and direction of human welfare.

And GDP has several problems. Like, you know, the bad defensive expenditure, it part of income, which should not be. You cut the forest, that goes to your income, but where forest goes? I mean, if income is based on the double bookkeeping system, so your credit, my debit – my debit, your credit. You cut the forest, the forest is gone. But you build a house, and your income has gone up and your everything looks good. That is bad economics.

“You cut the forest, and that goes to your income, but the forest is gone. That is bad economics.

Just one more illustration. No way can GDP be taken as a measure of welfare, which many studies have shown. One simple calculation: Suppose the GDP of a nation grows by 2 percent per annum. Two percent per annum. A thousand years after, what will be the income? It’s a simple geometric progression. It would be about 400 million times of what? So if GDP now is one, after a thousand years it will be 400 million times. Can you imagine human welfare increasing by 400 million times? Somewhere, this correlation between GDP and welfare is either lost or there is something wrong somewhere. We have to think about it.
But I will come back to the forestry part, because that is the point of discussion here. Under a new program called VANTAGE – Valuation and Accounting of Natural Capital for Green Economy – we have done some estimates. In Uganda, in the national income, forestry contributes 20 percent. In Uganda national income, forestry contributes 20 percent, but they are just the log, wood and timber. If you talk about other ecosystem services, they are missing and that constitutes 80 percent of the 20 percent which is being accounted. So, that 80 percent is absolutely missing.

Similarly for Kenya: 35 percent comes from forestry, again log wood mostly, to some extent some NTFP or non-wood forest products. And 65 percent of that 30 percent is missing. The sad part is that those missing parts are the income which goes directly to the poorest of the poor, and that part is missing. So GDP of the poor is absolutely missing.

In Gambia, the forestry contributes 6 percent and it provides one million jobs to the rural poor in Gambia. Now, half of them are not recorded. This is our own estimates.

Finally, in Central African Republic, the bushmeat which is around 1 percent of GDP roughly, it is missing from the calculation, yet it meets the needs of the people, the protein needs, of half the population.

These are some of the missing links and missing contributions which need to be captured. And that's why, as a final remark, in terms of green economy, what it can do to enhance the rural prosperity and shared prosperity – prosperity for everyone. Number one, make Nature's contribution and its values visible everywhere. Second, change the incentive structures by changing the set of options available to people, to all the actors, from households to national policymakers, through market-based instruments. Third, ecosystem or ecological infrastructure should be part of planning everywhere, including ecosystem-based adaptation to climate change. Natural capital can be very good, very handy in alleviating poverty. Mainstreaming of nature should be done across sectors, across actors and, of course, across disciplines. We have to think about new indicators. We know the problem with GDP. Why can't we think about inclusive wealth where you have human capital, natural capital and produced capital? Ken Arrow and Partha Dasgupta and many others have been saying for the last five decades. Per capita wealth measure, wealth measurement, gives you a better proxy for the progress of the system.

“Why can’t we think about inclusive wealth where you have human capital, natural capital and produced capital?”

And that's why this new program under green economy called VANTAGE tries to do all those things: VANTAGE – Valuation and Accounting of Natural Capital for the Green Economy led by UNEP.
Dr. Pushpam Kumar is currently Chief, Ecosystem Services Economics Unit, Division of Environment Programme Implementation, UNEP, where he works on mainstreaming of ecosystem services into development policy. He has engaged in international scientific assessments on biodiversity and ecosystems and climate change.

Dr. Kumar was Co-coordinating Lead Author and Co-coordinator, Responses Working Group for Millennium Ecosystem Assessment and Lead Author for the Fourth Assessment of the IPCC (Mitigation) – recipient of the Nobel Peace Prize in 2007. He was also the Scientific Co-coordinator of the Conceptual Framework for the TEEB.

Dr. Kumar has published numerous papers in peer-reviewed journals of international repute. He has authored, coauthored, edited and co-edited more than 10 books.

Currently, he also leads the GEF-supported project “Mainstreaming of ecosystem services into development policies (project known as ‘Proecoserv’), coordinates the “Inclusive Wealth Report”, “Valuation of Options” under Economics of Land Degradation (ELD) Partnership, and co-chairs the Policy and Technical Expert Committee (PTEC) of the World Bank-led Wealth Accounting and Valuation of Ecosystem Services (WAVES).
The Colloquium on Forests and Climate was jointly organized by the Center for International Forestry Research (CIFOR) and two centers within the Earth Institute at Columbia University: the International Research Institute on Climate and Society (IRI) and the Earth Institute Center for Environmental Sustainability (EICES).

Transcripts and videos are also available for the other speakers at the Colloquium on Forests and Climate:

**Eduardo Brondízio**
Professor of Anthropology at Indiana University Bloomington, on governance

**John Holdren**
US President Obama’s science advisor, on energy

**Daniel Nepstad**
Executive Director of the Earth Innovation Institute, on land use

**Carlos Nobre**
National Secretary for R&D Policies, MCTI, Brazil, on climate variability

**Cheryl Palm**
Director of Research, Agriculture and Food Security Center, Columbia University, on agriculture