

Environmental Audit Committee

Oral evidence: Biodiversity and Ecosystems, HC 636

Wednesday 24 February 2021

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Members present: Philip Dunne (Chair); Duncan Baker; Dan Carden; Barry Gardiner; Mr Robert Goodwill; Helen Hayes; Caroline Lucas; Cherilyn Mackrory; Jerome Mayhew; Matthew Offord; Claudia Webbe; Nadia Whittome.

Questions 217-237

Witness

I: Professor Sir Partha Dasgupta, Lead, HM Treasury Economics of Biodiversity Review, and Professor Emeritus, University of Cambridge.

Examination of witness

Witness: Professor Sir Partha Dasgupta.

Chair: Good afternoon and welcome to the Environmental Audit Committee for probably the penultimate session in our inquiry into biodiversity and ecosystems. We were due to have two panels today. The second panel was to have been attended by the Exchequer Secretary, Kemi Badenoch, but unfortunately she is unwell today, so we will be rescheduling that panel for next week. But today we do have our first panellist, and I am very pleased to welcome back to the Committee Professor Partha Dasgupta, who will be in a better position to talk to us about his completed report, as when you last appeared before us, professor, it was on the back of an interim report, which you delivered to Government shortly thereafter, so welcome back to the Committee.

Professor Sir Partha Dasgupta: Thank you. I am very pleased to be back.

Q217 **Chair:** Excellent. I am going to ask you to make one or two opening remarks about the three broad areas of transition that you have identified as to how we manage our relationship with nature and how we, in particular, harvest the bounty that nature provides, without harming its ability to reproduce and to continue to thrive. Could you just unpick the three strands in particular?

Professor Sir Partha Dasgupta: Sure. Actually, there are alternative ways of taking the strands. One could be simply to look at the impact inequality, which you are now familiar with—it's very visible in the review—and then look at each of the components. But I won't do that; I'll stick to the three-way partitioning that you are suggesting.

One is of course to try to get, broadly speaking, ways of trying to balance the impact inequality and transform it into an equality. That will include investment in restoration and conservation projects. That is the right-hand side of current inequality; to increase the productivity of nature by restoring it. On the left-hand side, it would be shifting to sustainable consumption and production patterns, women's access to education and community-based family planning programmes, to accelerate the demographic transitions for currently very poor countries, who are having a huge impact on their local ecosystems through population pressure. That will be one broad category.

The second—these are all interlinked, as you can appreciate—is changing our measure of economic success, which is another way of saying changing the language in which we speak to each other about our lives. Which is what economists do; we are human, we economists, believe it or not, and we do talk about our lives, but we measure it, or we recommend measuring it, in the wrong way, in a way which is harmful to the

biosphere. Natural capital accounting is an input into that. But it doesn't have to be all that sophisticated. Countries vary in their ability to do that. So long as you start doing it, you gravitate towards improvement.

The third is transforming our institutions and systems—our ways of doing things—in particular finance and education. They look very different from the outside. Finance, on the one hand; education on the other—where do they meet? But they are both contributing in a big way to our belief about where we are regarding our place in nature.

The global financial system needs transforming, in that it needs to make clear—and there should be the incentive—and take into account the impact of production and consumption activities on nature. The review goes into great detail, trying to explain how that can come about and why the market system fails.

When I say market, I don't mean free market in the usual sense. Socialist countries have been terrible, too, in the past. They have destroyed their nature. It is nothing to do with capitalism per se; it is to do with what signals the householders receive. That needs changing as well, and the review spends a great deal of time on that. Those are the three I would pick for you.

Q218 Chair: Do you have a sense yet from your discussions, both with the British Government and more widely, of how welcome your recommendations are? To what extent do you think opinion and behaviour is likely to change within Governments around the world, in this year of the biodiversity COP in Kunming and COP26 in Glasgow?

Professor Sir Partha Dasgupta: It may be that there has been some self-selection in who I meet—I suspect those who want to discuss it, because they are already concerned, approach my team. Given that, and subject to that potential self-selection, it has been overwhelmingly positive. I wasn't expecting it at all. I cannot cope with the demands and requests that I am now receiving. That is a large group, that self-selected group.

I haven't had contact made from several countries—countries that I would have expected not to make contact, which speaks to the self-selection. The interest in the review within this country has been overwhelming, and not just from Members of Parliament but university and religious leaders, and so on. It has been very positive.

Q219 Chair: We are going to get into much of the detail of what you have just highlighted in your opening overview. I just want to say that you had a direct impact on this Committee very recently. We produced a report last week on "Growing back better" from the covid crisis. As part of that report, we invited the Bank of England to consider nature as part of its remit. It is not exactly its job to decide its remit—it is the Treasury's—but that is one of the recommendations that we made. I think you can vicariously take some credit for that.

A final quick question from me before we widen it out. In relation to the



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behavioural changes that are going to be necessary, and the signals given by the Government, how do you think Governments should look at reducing incentives to take advantage of nature and increase those that protect it?

Professor Sir Partha Dasgupta: That is a very deep question. I will be brief, but we try to spell it out quite a bit in the review.

First, one obstacle we have to understanding the structure of incentives lies in the fact that economic models encourage us to think that we are all egoists. That is how the Treasury model is built, understandably. This is not a criticism of the model, per se; it is universal. The income expenditure models are built on the foundations of a world in which households think only about themselves and respond to prices and their income. The review spends a good deal of time discussing findings of people in the fields of sociology and anthropology, and history, by the way, to show that we are socially embedded people—we care about what others think of what we do. That could be exploited in a big way. Once we recognise that we are social animals, the scope for change is much wider. If we share some privation or deprivation, it is much easier to accept it than if we have to do it on our own. That is the dramatic way of putting it. Covid-19 and our experience this year is a very good example of how that is happening.

That is one. There are ways of trying to shift our choices from one type to another, to conservationally-oriented types of choices, which would make for huge, dramatic changes to the overall demand we make on the biosphere, in principle. In terms of the review, I used this for consumption choices, as well as fertility choices—that is to say, desired household size. There is a whole chapter.

To bring about such shifts from a profligate type of behaviour to a more austere or reasoned behaviour, there is a literature on behavioural analyses that we can exploit. The way we offer choices can affect what we choose, without actually changing the choices. That is the literature on nudge, which the UK Government took up some years ago, which looks to that. That is not the same as socially embedded preferences. These are anomalies we have. We may have inherited from our evolutionary past why we behave in such ways that the menu affects what we choose in a seemingly irrational way, but the review shows how that can be exploited to change the choices we make.

These are two unusual ways of looking at the problem. The more usual way, of course, is to say, "Well, there are taxes and subsidies, and that way you change the incentives." The review ultimately goes to another extreme, which is to, through education, change our preferences. The more we know, we may alter the way we view our activities. There is a whole line of them. Some are short and can be applied rather quickly; some will take time. Education, of course, is one that has a long drawn-out timespan. But then, this is a problem of the long run, with an urgency that is short run.



Chair: Thank you. I am now going to open it up to other members of the Committee. First, Duncan Baker has some questions on the consumption point.

Q220 **Duncan Baker:** It is absolutely fascinating as a subject, so thank you, professor. First, you put forward a host of recommendations on how to reduce consumption, from new taxes on unsustainable activity to raising the environmental standards on global supply chains. I suppose, like everything in life, we have to start somewhere and, I would say, be bolder. Certainly, I believe it is people who make the changes, not the state and big corporations, but what should the Government prioritise?

Professor Sir Partha Dasgupta: It would unseemly of me to suggest priorities to the Government. You are much more involved in decision making and have a knowledge base that I do not. I have a knowledge base that you do not have either, but we are looking at non-intersecting—

Duncan Baker: You certainly do.

Professor Sir Partha Dasgupta: I should not presume priorities. What I can talk about are, perhaps, slightly unusual ways of thinking about this matter. I think it links up with the financial sector. One thing the Government could do is to piggy-back on something we already do, which is, because we are concerned with our own health, weight and wellbeing, we insist now, or through the amorphous ways of public opinion it is the case nowadays, that whenever I buy something in the supermarket, some food item, it tells me what calories there are, and so forth. There is disclosure of the content, the food, the nutrition of the stuff that I am buying. That wasn't the case 30, 40 years ago—correct me if I am wrong, but my memory is that it was not there—so that has happened.

Why can't we piggy-back on that and insist that there is an account of the natural capital content and, for example, where it was sourced? It may be possible that it can't be done in one packet, otherwise it would become minuscule and you would not be able to read the thorough information, but there are ways around it. You could insist on the companies having websites where they disclose from source to sink, or source to the supermarket, what commodities were involved. If one wants to be even more fastidious, disclose the proportions of expenditure on the food item that went through the supply chain. Many people would demand that in this country—at least people I talk to—because they are very concerned about the fact that middle men pick up a huge amount of the rents in the transport stage. These are important items for the consumer and person who is concerned with the ecological implications of the food we eat and clothes we wear. It is not just food, by the way. Any consumption item can be decomposed into its components. That disclosure could, I think, do a lot because it is another nudge-like thing. It is basically giving a lot of information. Of course, the consumer could ignore it, but we are unlikely to. It is one of those things where things can multiply pretty fast—

Duncan Baker: It will emerge.



Professor Sir Partha Dasgupta: If we see one group of people doing it, then others do it, neighbours do it and discuss it. That is the neighbourhood effect that I was talking about and is one possibility. The other is, of course, taxing waste—increasing the tax on waste. I don't know whether you think this would be palatable in a democratic society or whether we, consumers and taxpayers, are going to rebel, but I like to think not, particularly if there is a parallel educational and publicity programme on what we are doing with our waste, and so forth. A certain amount is happening even now, I know, but perhaps that could all be set up. These are at least two ways that I can think of that would be immediate that one could think about. We have been successful, I think, in some ways about our own health. The amount of publicity we have about cholesterol and so forth, we did not have 30, 40 years ago. I wonder whether we couldn't use that kind of strategy to shift our consumption away from predation on nature, or less predation on nature.

Q221 **Duncan Baker:** I think you are absolutely right that health has been a key, dominant area, and it is a launchpad on to other areas, as you suggest.

I want to move on to agriculture. I live in a farming constituency and am very much part of a farming community with family in North Norfolk, and I think there is a huge amount of scope for efficiency in improving agriculture. In some regards, the Agriculture Bill reforms will immediately help that trajectory—seismic changes will have to be made to improve efficiency. Where is that space for improving efficiency in the agriculture sector?

Professor Sir Partha Dasgupta: Wow—that is a really hard one. It is hard because you probably know a lot more than I do, so it would be impertinent for me to say too much on it, but I will just give you the background on why we are concerned about it. It is because on the whole we have been concerned to satisfy our provisioning needs. The review, in its second chapter, makes it clear that one big reason for the situation we are in arises from the fact that mother nature is providing us with stuff that we call provisioning: food, clothing, timber, fibres and water. Those are the things that are immediately required, but for their production there is a whole set of goods and, in particular, services that mother nature is offering: regulating and maintenance services—the classification comes from the Millennium Ecosystem Assessment of 2005—and those are the ones which are really under assault, hence the review and why you are meeting here today.

We are concentrating on the provisioning, and that is undermining the regulating and maintenance services—for example, soil depletion in terms of its nutrient content. Once you are looking at the production end of food and the factor that is producing food, namely these regulating and maintenance services, and you combine it with the fact that the consumer is wasting a lot of food, one way to do it would be a move that you are already making—I do not know to what extent it is intensive—which is to subsidise farmers to move away from production to greening and that



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class of issue. That is a way of increasing the “size”—the stock—of the biosphere. That is one, and there is a great deal of scope there.

The other is of course subsidies, which are implicit in our treatment of provisioning services. The review estimates that there are something like \$4 trillion to \$6 trillion a year worldwide of subsidies, including water and energy and so forth. These are details that pretty much anybody in HMT would know, and weakening the subsidies would be one way of going about it. Of course, there is genetic modification, which we have not really entered into in any detail. But environmentalists in Asia—where I was born and raised—in India, for example, are surprisingly hostile to it, for reasons that I do not really understand. Maybe that is because I hang out with the Royal Society people. Scientists are pretty much in agreement on genetic modification. Of course, genetic modification has been tried for millennia, and that is not the issue; I think it is new ones that people are scared of. That would be another route for transforming agriculture.

There will be many others that have occurred to you, but it seems to me, as I say, that we are subsidising the provisioning service in an unacceptable way, because it has repercussions on the other types of services that the biosphere offers, and what is under assault is the other side—if you like, the floor on the basis of which the ceiling and walls are constructed. The floor is the regulating and maintenance services. That is why you are worried about agriculture, for a very good reason—soil and so on.

Q222 Duncan Baker: If I may knit on to the end of that, you talked about genetic modification, for instance, as one way of improving efficiency. I am amazed by your notes and how we need to have 1.6 Earths to maintain the world’s current living standards based on consumption. It is phenomenal. When you have recognised the gains, how do you make that food production more sustainable?

Professor Sir Partha Dasgupta: Experience with socialist planning in the ‘30s and ‘40s has told us that in a sense you can’t guess in advance what the world will look like when you make changes. It is not as though you are planning out. I know what a sustainable consumption bundle looks like—what people consume. My imagination doesn’t run that far. What one does is to grapple with all the components of the impact inequality with which I started, and try and close down the loopholes in each of the factors and see what will happen, because of course entrepreneurs and producers will respond to these moves that we are discussing now. We have just discussed two or three such moves, on the food production, subsidies and so forth. We will find, to our surprise probably, depending on who the person is, that producers, and in particular entrepreneurs—those who are investing in R&D, new technology—will respond in a way that we hope will be less pernicious, less predatory on nature, because you are making that too costly. That is the idea. We want to make the use of nature more costly than it is. There are many ways of doing it, and that is one of the things that we study in the review.



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What will emerge out of it? The image could be, "Oh, gosh, if it's 1.6 Earths, we really have to reduce our consumption pretty fast because numbers can't change that easily." It is future numbers we are talking about, not current numbers. Therefore: "Gosh, we all have to tighten our belts. You are asking us now to go back to the consumption levels of 200 years ago." We can do some calculations like that, but that is not the way the review moves. That is not the right way to think about it. The responses that will be made by all of us to the shifting prices that we face for the goods and services we consume will lead us in a way in which, for all I know, we will actually be a lot richer in consequence. Maybe I should have been more explicit in the review. In fact, I probably ought to now have a new appendix on the review following these conversations we are having. It is a mistake to think of the impact inequality in numerical terms. I know it is qualitative inequality; that goes without saying, but it may well be that at the end of the day we have, as I say, impact equality, but by the time it is over, we will actually be leading richer lives. I have no idea.

Q223 Duncan Baker: My time is up, so may I have a very short answer to the last bit? What you have said is fascinating. I know this is a huge question, so it is difficult to keep it short, but where do you see the scope for increasing environmental taxation, and what products and activities would you look at?

Professor Sir Partha Dasgupta: I think that is for the policy maker to decide. The review has produced the tools on the basis of which the policy maker will make the decisions, just as they do now. They decide which demand functions are more elastic than others, and where you can cream off because it is inelastic and demand will not change very much, or whatever. That is not for me to say.

Chair: Now we are going to move to some issues on population with Robert Goodwill.

Q224 Mr Goodwill: It is always fascinating to hear you, Professor Dasgupta. I would like to talk a little about population, and population control. You have already talked about the choices that we make, and the choice between austerity and profligacy. Of course, the other decision that people often make is about the size of family that they are going to have. There does seem to be some sort of inverse correlation, not only in our own country between the wealthy and the poorer, but particularly between the developing world and the developed world, in terms of family size and population growth. Why are we not investing sufficiently in overseas development assistance for family planning, contraception and education in these areas? Is it a cultural issue? Is it about not wanting to interfere, or should we be doing more?

Professor Sir Partha Dasgupta: That is another tough question, because I cannot enter the minds of the people who make these decisions. All I can say is that the study suggests very strongly that we are underinvesting. I have to give a reason why we are underinvesting, from plausible ways of looking at it. It may be that it is out of cultural



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embarrassment, or at least it may be that we are told by those who are receiving our aid that this is a cultural matter. I have no idea.

One of the things that I was at pains to explain is that fertility behaviour, having children, has externalities, has consequences on others, in particular in the future, other things being equal of course—other things being that we do not internalise the consequences of our actions, whether it is in food, choice of children, or the clothes we wear. We seem to be quite happy accepting that fact over food and choice of clothing, if that is what we have been discussing up until now on the consumption side. There seems to be a resistance over children. This is a cultural phenomenon that I cannot really grasp, because I am a scientist, and I have never asked myself, but our fertility decision, our reproductive decision—the kind of family that we will have—is as deep an issue for us as what we eat is. This is a very profound thing.

Nevertheless, if I know that my action is affecting others in a detrimental way, would I not wish to take that into account? That has not been pointed out to anybody. My own feeling is that keeping the discussion suppressed has been extremely harmful. It has been harmful from the perspective—in the review I make it clear—of the world's poorest women. We have been underinvesting.

There are more than 200 million—perhaps 250 million—women of reproductive ages in the world's poorest countries. Let's come clean: the world's poorest countries on the whole are in sub-Saharan Africa; that is where they are. They have expressed an unmet need for family planning. So it is not a question of me suggesting that they ought to have that; they are expressing it. They are saying, "We would like to space our children better," or "I don't want to have any more children." Then you ask, "Are you practising modern family planning techniques?" The answer is no. That should be available to them. Again, it is a matter of offering choice, so that they can make an informed decision. We are not doing that; we are spending far too little on it.

As the review makes clear, the EU spends less than 1% of its aid on family planning. On the recipients' side, I know, because I was raised in India and I have many friends in the Indian Government, that the family planning part of the Health Ministry is probably in the basement. You will not see the likes of them very much in African Governments.

Mr Goodwill: If I may, I started to understand this situation a little many years ago when a Young Farmers exchange student from Zambia came to stay with us for a week. He had a massive family. When I asked him why, in a country where things were so tough and poverty was so endemic, there was such a massive family, he said, "Well, it's simple: the more children you have, the more chance there is that one of them will get a job in the Government, or become a doctor, or be able to provide the income for the parents in retirement." It was down to a lack of state pension that for some reason this became the issue, and because it was the norm. Are there other underlying issues that we need to try to address with Governments in these countries that might help them to understand a



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little bit more why they should maybe try and control their families, and why it is not a good idea to have massively explosive populations in these countries?

Professor Sir Partha Dasgupta: Absolutely. I will make two responses to that, which both speak to the point you are making. The answer that your colleague gave you seems absolutely right, and yet that shows how there is a huge co-ordination failure in societies where this externality is allowed to go rampant. The more children others have, the more you need to have, to increase the chances, because if you only have two or three, the probability of getting employment is so low, because others are swamping the market for employment opportunities. So here is a co-ordination issue where everybody can gain by somehow or other reducing it, but that requires serious government engagement in persuading.

The other side of the response to your question is something that you probably pointed out to that person. In some of the observations I have had in response to the review, there is a suggestion that, "Look, the review says that with sub-Saharan Africa being so poor, and the GDP of sub-Saharan Africa being so low as a proportion of world GDP—we are looking about 4%, 5%, 6% or thereabouts—they are not responsible for the current pressure on the global environment." I stick to that, because that is fact. It is true that they are negligible.

However, that does not mean that the biosphere is not of importance to sub-Saharan Africa, because the local biosphere matters to them. The farmer or the villager in Mali or wherever is not really affecting at all the biosphere writ large, but he or she is affecting the bit of the biosphere, the ecosystem on which that family resides. That is being affected in a big way if they have big families, for the simple reason that they cannot import or export their problems out. They are basically not trading. They are like subsistence farmers. If they have too much pressure on their own land, then distress migration follows, and we see so much evidence of that.

I have cast this impact inequality that I keep on referring to in the global context, but it can be shrunk down to a statement about the impact inequality at the level of a village, even. That is the second prong to the answer: namely, it is in their interests—not just in the women's interests—to reduce family size. Other countries have experienced fertility transitions quite successfully, for example far eastern countries such as Korea. Most countries had very high fertility rates because the mortality rates used to be so high.

Q225 **Mr Goodwill:** Yes—and it was enforced, of course, in China through the one-child policy.

Professor Sir Partha Dasgupta: Yes. They have had different kinds of policy, but you are quite right.

Q226 **Mr Goodwill:** Aside from directly assisting in family planning, in what other ways could we realign our overseas development budget to try and achieve our targets on biodiversity and meeting those global objectives?



Professor Sir Partha Dasgupta: It would be very helpful if the World Bank, for example, in its lending policies focused on green investment in those countries and away from large infrastructure—for example, high dams. One of the things we show in the review is that even for what we have traditionally called economic reasons, high dams have proved to be very unproductive. The investment costs are invariably about 1.5 to 2 times what is expected, so the rate of return after all costs are included will turn out to be low—and that is before you count any environmental impact of the high dams.

One way would be to have green investment, to improve the local resource base of these nations. When I say green investment, I mean local—the watersheds, the wetlands of these countries. Again, the review has quite a lot to say on this, but there is a good deal of evidence, overwhelming evidence—I have not found much counter-evidence in the variety of case studies I have studied—that local communities are far better at managing local ecosystems than the state is. Repeatedly, case study after case study has shown that the productivity of ecosystems, other things remaining the same, that are communally managed by the usual social norms, or what you would call social capital here. The communitarian rules are far better than outsiders coming and telling them how to manage it. That is one thing.

There is a whole range of such institutional pressure that aid agencies can make, in the friendliest way. After all, this is not a hostile suggestion; it's for them, not for your welfare. We have an aid budget and it is a good one. It used to be even better, I guess, but it certainly should not be spent on—The character of aid investment needs to change, in line with what the review suggests.

Mr Goodwill: We have control of all of it now, rather than the EU deciding for us, I suppose.

Professor Sir Partha Dasgupta: For sure.

Mr Goodwill: Let's not go there. Back to you, Chair.

Chair: I am conscious that we have got only a little over 20 minutes, so can colleagues be quite concise in their questions? Welcome to Helen Hayes, on her debut in the Committee, to ask some questions about the protection of nature.

Q227 **Helen Hayes:** Thank you, Chair. I am glad to be here. Thank you, Professor Dasgupta. You emphasised the need to increase nature conservation efforts. As a former town planner, I am always interested in the role that the planning system has to play. Can you say a little bit about what legal instruments you think should be used in the planning system, to give more space for nature?

Professor Sir Partha Dasgupta: The standard way would be, the argument goes, that we would have some kind of pricing system. That is to say, you take into account the prices that you observe for the goods and services that are being affected by your planning programme, and



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then you have lobbies coming along to say, "Well, we're going to lose so much." Then someone in the community says, "We lose so much," or "We gain so much." That's not working here, for the reasons we have been discussing.

So I think some notion of notional prices of natural capital should be included in the discussion of planning permission, no different from any other investment decision. Planning permission, let us say, for a housing estate, really is an investment decision, at one step removed. The investment is not being decided upon, but it is giving the option for that investment. It's going to happen. So it seems to me we need some notion of notional pricing to be attempted.

In other discourses, the moment one mentions prices, one thinks there is a price per unit for stuff, like buying food in the supermarket. I don't have that in mind. I have in mind the fact that very often these notional prices will not be there. We call it accounting prices. A local authority cannot dream up these accounting prices for itself; they have to come from the natural capital estimates. If the Office for National Statistics were to give notional prices, then the local authority could use those notional prices, but in the absence of that it seems to me that the only thing that we have is what we are actually relying on, which is residents' pressure.

We want quantity controls, instead of prices. We have to have green space. We keep boundaries around it, and it cannot be encroached upon. That is the language we use nowadays, isn't it? That is largely because there are no prices to be had to value the stuff that we are eroding, because of the competing needs; those would be housing, let's say. At least, in Cambridge, that seems to be the domain of discourse. We need housing, so you encroach a little more and a little more, because relative to housing needs the price of that object that is not priced is belittled further. So I think some notion of pricing needs to be included. You can't do it individually. I cannot see it happening except through the Office for National Statistics.

The recommendations of the review are really integrated. We suggest that it is neither top down nor bottom up; it moves sideways. That picture came out of necessity because many prices are missing. There is nothing you can do about it. To the extent that pieces of property or pieces of natural capital have that intrinsic value—they may be cultural objects of significance—those get protected because there is a common understanding that they are no-go areas. The problem arises that it could be existing farmland, which you buy up. On the other hand there is an option, which is to green the farmland, but that doesn't have the required price and so the local authority obviously moves in the direction of least resistance. So I am afraid I can't give you a better answer than that, but it seems to me the source of the problem is lack of pricing. So somehow the other solution must be there—to have some implicit pricing mechanism. I don't see that happening without central advocacy.

Q228 Helen Hayes: Building on that, could you say a little bit about what you see the short and long-term economic recovery potential to be from



ecosystem restoration?

Professor Sir Partha Dasgupta: Let me try responding to it—not answering it, because it wouldn't be an answer; it is really a response—in a different way, which is: how do we think of estimating a benefit? I can imagine a world in which the true benefits would be reading poetry—expansion of poets. I can imagine that. If we valued poetry, we would invest a lot in the production of poets, or allowing people to develop their talents in that direction—not making it so costly for their future welfare or earning capacity, and so forth. So, in a way, what we regard as beneficial in the long term, short term or medium term depends on our expectations of prices. When I say prices, of course I mean in a more general form—the kind of world which will unfold.

There are two things going for green investment. One is that it is very, very cheap, relatively. At the extreme, think of it—planting a seed. That's it, and let it grow. Leave it alone, so to speak. Don't contaminate it, and hopefully there is enough water—rainfall—around. The other side of the coin is that of course it can be very slow. So up-front investment outlay is small. The return comes in in a delayed fashion relative to quick investment outcome and that is, in many ways, the reason slow-growing natural capital has had a hard time throughout history—because entrepreneurs would wish to compare the rate of return against the discount rate they use for discounting future benefits. So if the rate of return is low relative to the discount rate, you plunder it—you shift it up. So old forests disappear pretty fast, because they have trees which are 200, 300 years old—they can grow up to about 100 years and then last for some time longer. Well, who is going to wait for that? On the other hand, the investment cost is very low; but the point, really, is to have a price on the tree, to make it profitable.

So we come back to the long/short. Essentially the distinction is not really that important. It becomes important because our pricing system is so wrong and the discount rates the market has are too high relative to what citizens ideally would like to have in a world in which they care about their children, grandchildren, and so forth.

Helen Hayes: Thank you.

Q229 **Claudia Webbe:** It is great to meet you. I am fascinated by your concept that any change in the economy which increases inclusive wealth is of course a good thing in terms of social wellbeing. How should Treasury policy makers incorporate measures for inclusive wealth and natural capital across its fiscal planning framework and operations?

Professor Sir Partha Dasgupta: Thank you very much. All these questions are remarkable, and I wish now that I could have a magic wand and change the exposition of the review. I have learned a lot from these discussions.

The first point to make is that whenever investment outlay is considered, take natural capital into account. You have human capital—the investment outlay, labour investment in bulldozers or whatever. We have a routine



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method of doing cost-benefit analysis, implicitly or explicitly. We like to have it explicit, but they are all rough. The first step is to include nature—natural capital—in the investment decision or, more generally, the policy decision. I will stick to investment, which is more concrete because it involves investment now and then a pay-off later.

That is the first step. We already have the right criterion for it. The criterion is something like net present value. You ask whether the net present value is positive, then you start bickering about discount rates of course, but you see the language we are already in. The language says we evaluate projects or policies by looking at the change it brings about, and we evaluate the change that the policy or project introduces by looking at the net present value of that disturbance or change. If that is positive, you go ahead. If it is negative, you say no. I am putting it in a crude way, but that is the rule. The problem arises that, in estimating the net benefits and costs, we do not include what we are doing to mother nature. It could be a wetland that is being trampled on, it could be ruining the soil that we are building on, and so forth. Agricultural production is full of the harm it has done to the soils. That is because the soils were not part of the calculation of the farmer, because so much of the negative effects were passed on to other people, or there was a lack of foresight on the part of the state. That is the first step: you include natural capital.

Ask yourself what net present value measures. It is adding up the net benefits of the project or the policy change over time and applying a discount rate to sum them up. It is the sum of the discounted flow of net benefits from the project. But the sum of flows is nothing other than a stock. That is what a stock is. A flow is the rate of change of a stock. A practice that we are familiar with—namely, using net present value as a criterion for project selection, which all Finance Ministries follow, in one way or the other, throughout the world—is the inclusive wealth theorem. It is saying that when you choose, choose in accordance with increasing the wealth of the nation, if it is a national project, because net present value measures precisely that. The only thing is that it now includes natural capital, which it typically does not. That's one side of it.

On the other side, we also want to know how we are doing. Is our economy in a better state now than it was before, as opposed to what we just discussed, which is saying, "Should I do this, or should I do that? Should the Government invest in this project, or should the Government invest in that project?" For that, we agree that it is net present value, including natural capital. That is the same as saying, "Inclusive wealth increases by this investment decision." But the other question is: are we doing better now than we did before? For that, we usually use GDP and say, "Yes, we are richer now." But you can now see the contradiction. In this case, we are using GDP; in that case, we were actually using wealth. What the review does is to show that these two questions—what should we do now, and how are we doing now, relative to how we were before?—are essentially the same question. They have the same answer—namely, use inclusive wealth as your measuring rod. If inclusive wealth increases, you say we are wealthier. Just as a household would say, "We are



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wealthier today compared to last year. We have greater wealth, which means we have more options and we can do more things, so it cannot be that we are worse off than we were before, unless we make a mess of things”—but that’s a different matter. Normal, common language tells us that wealth is a measure of wellbeing. But it takes time into account. That’s the key thing. Wealth embodies time, because let’s say the value of your own human capital, Ms Webbe, is the flow of your future earnings—that’s one way of looking at it. You are discounting that back and saying, “Well, I can rely on the fact that tomorrow I won’t go hungry, because I embody all this human capital.” That is part of your wealth.

Q230 Claudia Webbe: Sure. That’s great. Can natural capital accounting be integrated into Government’s accounts and used really for decision making? How do you see that working?

Professor Sir Partha Dasgupta: It has to be done. The review suggests that is exactly what we should do. There is always a problem for any new system. This one has, seemingly, an insurmountable problem. This is something that I am rather proud of exposing in detail, so that we should not get over-excited about a new world where we do things right in economics. We will never get it right. The reason is that nature has these properties of large-scale invisibility and silence in natural processes, which make it impossible to value all bits and pieces of nature. There will always be things missing in your calculations. Subject to that understanding, you will have an approximation only. Subject to that understanding, there is no reason why there cannot be an integration. Really, it has to be done, because in the absence of integration you have chaos. One system is doing one thing, another system is doing another thing and they are not cohering. They could be belittling each other and doing something that is worse for the overall economy.

You do not want chaos, especially now. Given the 1.6 Earths that the Committee mentioned previously, this is really urgent. We cannot really afford to say that we will wait for that to happen later and do this now. In some sense, we have to act on all fronts. You are asking a question, which is extremely important, about the changes in our institutional configuration, of what constitutes information flow. There I think we are on some pretty strong ground. We need to have statistical offices coming up with a picture of the asset composition of the nation, just as firms have balance sheets. No firm in its right mind—no manager will be found to be in a position where he cannot tell you what furniture he has on his factory floor or how many workers he has. He has an account of the stocks that he has at his disposal. Likewise, we need to have stock accounts, not flow accounts.

Those stock accounts will be incomplete. They will not necessarily have prices. No, many countries won’t have prices. But most countries don’t even know how many wetlands they have. Nobody cares. Fisheries—ask a poor country, “What is your stock of fish in your ponds and so forth?” There will be no answer. You could ask how much forest cover there is. Nowadays, forest cover is easier to get, because they can rely on images from the stratosphere, so to speak. But we really have to move to a stock-



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oriented picture, just as we do about human capital. We see how many people have tertiary education and so forth. We have a fairly good account of the composition of human capital. We ought to have it for natural capital, as well. That is in the statistical office.

All Departments of Government ought to have nature built into their system of account of their consideration. Natural capital is not the exclusive item of the Environment Ministry. The Treasury, the Bank of England, you name it—they all ought to be including it.

Claudia Webbe: Thank you so much. It is a privilege.

Chair: Professor, I am very conscious that we have only five more minutes of your time and three sets of questions to ask. If you are willing to give us another five minutes, I shall encourage colleagues and you to keep things very quick—

Professor Sir Partha Dasgupta: I will try to give the answers in one minute each—or 1.25 minutes each.

Chair: That would be marvellous, and the same for colleagues.

Q231 **Caroline Lucas:** I will pick up where Claudia left off, because I am really interested in probing the potential tension between the approach of natural capital accounting and an approach based on more understanding of an intrinsic value. As you have just said, professor, natural capital accounting doesn't account for the intrinsic value of nature and is based on imperfect information, but is there a real risk that it could imply that different forms of nature and human-made capital are in some ways substitutable, and is that not quite dangerous in the absence of perfect knowledge, which we have acknowledged we will never have?

Professor Sir Partha Dasgupta: The idea that if there are prices it means that they are perfectly substitutable is not quite right, because the prices embody the limited substitution possibilities. If there is something scarce and it is not substitutable for others, then relative to the others its price would be extremely high. That's the whole point, because if you then reduce it a little bit, you will have a huge drop in your welfare, because it is not really substitutable.

The substitutability issue crops up in a dangerous way elsewhere, which is that we—particularly we economists—don't appreciate that these maintenance and regulating services that mother nature offers us are complementary to each other. They reinforce each other, and if one crashes the others will crash together, like the climate change issue. Climate change is related to the entire structural web of life. The complementarities make for nature to have a very high price—far higher than we think.

What we tend to do is to look at use value, as you say, and we ignore the intrinsic value, except in exceptional circumstances, such as when a community says, "No. This is a sacred forest. It is not to be touched". Most societies allow for that, but in between that and the use value, there



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is a huge gap, and there is a whole range of resources that are trashed by the rest of society because they aren't priced.

However, even their use value is unpriced, which is a problem. One of the things that we do in the review is to say that the reason we spent quite a bit of time on the use value of natural capital is that if nature is supported more—a lot more—when we use the use value in the national accounts that I was speaking to just a few minutes ago, then they would be supported even more when you add the intrinsic values.

I would take it step by step. I would tell the decision maker, "You tell me why the wetland can be given up for a new road system, because you haven't taken the use value into account," and if he then comes along and says, "My best estimate of the use value of the wetland is such that the road trumps the wetland," then I will introduce the intrinsic value argument.

In many cases, the use value itself will support the preservation of the wetland, so we should use it sequentially, I would argue, rather than getting hamstrung by saying, "Well, you can't measure it, so—". Then the economist throws up his hands and in his superiority says to you, "Well, if you can't come up with a price, let me get on with my business." Do you see what I mean?

I am very much with you, because I do believe that the intrinsic value of nature has been undermined hugely, but there is a tactical advantage of starting with use value.

Q232 Caroline Lucas: I am just worried that in the actual process on the ground we won't get as far as being able to say, "Here's my trump card on the intrinsic value," because already that trade-off will have happened, with the road going through instead of the wetland. But I am aware of—

Professor Sir Partha Dasgupta: That is always a possibility. The fight isn't going to be over just because you have realigned it to introduce natural capital. Yes, it's a long fight—no question about it.

Q233 Caroline Lucas: I had another—it's not really a quick question; it's kind of a PhD thesis, but if you can do it in a minute that would be marvellous. The report points out that material economic growth is inevitably bounded by environmental limits. Do you think that in countries like the UK, we have reached those limits already—at least in some sectors—and if so, what could we do about it?

Professor Sir Partha Dasgupta: Remember, we trade our problems away very often. Broadly speaking, to answer your question in terms of the biosphere as a whole, the wealthier parts of the world are of course overusing the biosphere—that is for sure. We have discussed that before. If we are part of the wealthy, we are doing that.

The issue is not restricting attention to the natural capital within your own boundaries; the fact is, trade allows us to overcome our boundaries and



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go into other people's natural capital, and build it into the stuff that you import. My guess is, yes, of course we are. If we had an equitable allocation of biosphere services across the world, of course we are doing more than that—1.6 is 1.6, and somebody is picking up the 0.6. We are doing that, for sure.

Q234 **Caroline Lucas:** Would consumption emission accounting be a way of dealing with that?

Professor Sir Partha Dasgupta: Yes. The entire discussion is geared towards seeing how to reduce our impact on the biosphere—absolutely.

Caroline Lucas: Thanks.

Q235 **Barry Gardiner:** Professor, I have four quick questions on the reform of financial institutions. First, you talk about payment for global ecosystem services, such as oceans. Who would be trusted to receive the payments for use of the global oceans? There are practical constraints here. How would you establish those supranational institutions and get them off the ground?

Secondly, when we are talking about targets for public investment in nature, how do we get the traction for institutions that we already have for the UNFCCC, such as the CBD, to ensure that the targets that are agreed internationally are then met, enforceable and legally binding, in the way the Paris agreement is?

Thirdly, how can nature-based financial disclosure be mainstreamed into the financial system? We have the Task Force on Climate-related Financial Disclosures; we need it for nature-based financial disclosures as well. Should that just be a simple parallel, mandated on businesses?

Fourthly, how can regulatory powers be used to counter the short-termism—

Professor Sir Partha Dasgupta: I think Barry has frozen. I hope you can hear me.

Chair: We can hear you.

Professor Sir Partha Dasgupta: You have thrown four googlies at me. First, on payments for equal systems service, it of course starts from the small: a farmer receiving payment for the benefits that his farmland or forestland or wetland offers the neighbours. That is one class. Your example was about the transnationals that I was proposing. That is extremely important, but then, we do somehow trust the WHO. We have transnational institutions supplying public goods. They were designed for global public goods. The IMF is controversial—its policies may be controversial—but the fact is these are objects created by global citizens. The IMF, the World Bank, the WHO and the FAO are all transnationals involved in the supply of public goods.

If we feel that we can discipline them, and interacting with them makes them trustworthy and so forth, I cannot see any reason why we cannot think of transnationals, which are desperately needed in my judgment,

monitoring and taking charge, in some sense, of the global public goods that are nature—the open seas or high seas, the tropical forests or the atmosphere.

On the atmosphere, with the way in which the climate change negotiations have taken place, such an institution has not been invoked. Instead, it has been delegated to each country, but it has not gone very far because the agreements are unenforceable. So it has been done; so we have chosen. We have really not been very successful with Paris so far, largely because we have not taken it very seriously, I think. That is the answer. That is to say, we already have transnational institutions, so it is not as though our thinking is coming out of the blue.

I have now forgotten the other three questions. Let me see—on the transparency issue, the answer is yes. In my judgment, it should now run in parallel. All we are doing is to add another component to our decision making—not a component that needs to be taken into account when we make decisions. That is to say, to sum up the review, it repeatedly states that there is one item that is almost always missing from the calculations that decision makers make throughout the world, in different departments—no matter which department it is. The item that is missing has some special problems, which make it difficult but not impossible, because aspects of it can be grasped firmly and brought into comparison with the other variables on which we make decisions.

Barry, I do not remember the other ones, but I wonder whether you can use that observation to enlighten the other two questions that you asked. I have managed only two of the four, sorry.

Chair: I think you have done incredibly well, professor. We will now move to the last set of questions, from Cherilyn Mackrory.

Q236 **Cherilyn Mackrory:** Thank you, Professor Dasgupta. It was fascinating to listen to you, and I appreciate everything that you were talking about. In particular, I was interested in the food labelling, which I have bothered DEFRA about many times. I want to ask a fairly swift question about what message you think ordinary people should take from your review. It is important that we get right down to it, to bring it home in the UK. What message would you like ordinary people to take from your review?

Professor Sir Partha Dasgupta: Mother nature matters in ways that we do not appreciate—that is the first message—and I hope that aspects of the review will explain why we do not appreciate it. We have the tools now not only to appreciate it, but to do something about it. The language that we use to run our lives is vastly incomplete—that is the second message—arising out of the fact that we do not appreciate the presence of nature.

The third message would be that we should not feel that we have to be so holistic that we cannot break down the problems into manageable forms, in the same way as a householder does—no matter how poor he is—in deciding what to do each day. How much time to spend on minding the cow, if he has one? How much time to spend on tilling? Who does the



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cooking? Who collects the firewood, who fetches the water, and so forth? A genuinely holistic thing like life is, therefore, on a daily basis broken down into tasks. We have got used to that, and certainly farmers and poor people have, because they live in nature, so nature is part of their calculation all the way.

That is one big thing that we need to understand in the west—this is not new stuff. The review is, if you like, the easy meat for even an illiterate farmer. If he were told what the review is saying, he would reply, “Get lost! I know this,” because his life is like that. We do not know it, because we have moved into a different sphere. That would be my third message.

Q237 Cherilyn Mackrory: I understand exactly what you are saying. Building on that, for people outside formal education or even for children who are in education and learning about the world around them, how can DEFRA, the Department for Education or anyone in any Government Department help them to reconnect and to access nature?

Professor Sir Partha Dasgupta: Again, you are asking the wrong person; I am illiterate in this matter. I have been teaching, but I am not an educationist; I teach grown-ups, I guess.

The review suggests that this really ought to start right at the earliest stages, because so many of our children now are urban and they only see the odd tree. It ought to start then and should be a compulsory subject. Of course, it requires fieldwork. Nature studies is essentially fieldwork—it’s not theory only—and fieldwork means you are getting in contact with it. More importantly, if you start it, you mustn’t close it at the end of primary school. It really ought to go on; it ought to be pursued subsequently as well.

I may have mentioned the last time I met your Committee that the United States used to have a compulsory subject called Civ for freshmen and second-year students—the first two years before you choose your major. Civ was western civilisation, basically, but it’s a terrific course. Somebody could want to do computing, could be an economist—you name it—but everybody had to go through Civ; it was part of the credits that you had to take. It’s a terrific course, because you are coming into contact, albeit very shallowly—that doesn’t matter—with some of the greatest minds of the past.

Our education system is not quite like that. Some of the newer universities have it, but my own university is extremely specialised: for three years, you study one subject. There is nothing wrong with that, either, but there are some things that could be done to repair it by inserting, perhaps, something like ecology or some broad nature study—natural science—because there’s great stuff out there in the world to learn about. It is not that difficult these days, with so much pedagogy around. Even I have understood ecology pretty well—I have no background in the biological sciences—with a bit of effort and talking to people and colleagues. I would say that’s how I would go about it, but no, I can’t talk about the



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curriculum. That would be beyond me; I just wouldn't know how to think about that.

Cherilyn Mackrory: Thank you, professor. I'll hand back to the Chair.

Chair: Professor Sir Partha Dasgupta, you have been very generous with your time. Thank you also for the very generous spirit in which you have handled the questions. I think most members of the Committee would like to pass on our thanks to Medha Bhasin, the Clerk who helped to put together our brief and had the—I suspect enjoyable—task of reading your report, "The Economics of Biodiversity". Thank you for appearing before us.

Professor Sir Partha Dasgupta: May I thank you in return by saying what a pleasure it has been to meet you all? You are doing a fantastic job—you're lucky, doing what you're doing. It's fantastic.

Chair: It is a great topic and you have enlightened it for us. Thank you very much indeed.

Professor Sir Partha Dasgupta: Thank you. Bye-bye. Take care—keep safe.