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# "ENVIRONMENT AND SUSTAINABLE DEVELOPMENT" COMMISSION

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Meeting held on October 21st 2021

# MINUTES OF THE MEETING OF

# THE ENVIRONMENT AND SUSTAINABLE DEVELOPMENT COMMISSION

- 21 October 2021 -

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The meeting started at 2:30 p.m. and was chaired by Xavier Timbeau.

# INTRODUCTION

#### Xavier TIMBEAU

Hello all. Our meeting is dedicated to environmental economic accounts. The subject is not new but it is extremely relevant nowadays. A European framework, encouraging the adoption of more elaborate and consistent environmental accounting, is being built as part of the Green Deal. The requirements of ecological transition also call for an integrated system. During this meeting, we will look at the state of play of the development of environmental accounts and will discuss concepts, limitations, interpretations and evolutions in this domain.

The agenda includes six presentations. Unless it is necessary to clarify specific understanding, I suggest that we open a Q&A session after the last presentation.

# I. ENVIRONMENTAL ECONOMIC ACCOUNTS: CHALLENGES AND ISSUES FOR MONITORING PUBLIC POLICY

# 1.1. From environmental statistics to integrated accounting – Evidence for transformation processes towards sustainable development

#### Walter RADERMACHER, former Director-General of Eurostat

It is a pleasure to speak to this audience. My French is a bit rusty and it is sometimes hard to make a presentation in a language you do not use on a daily basis, so hopefully it is acceptable that I speak in English. I was asked to frame the discussion and it is a pleasure for me to do so looking back over 30 to 40 years of development, trying to find a balance between different angles of policy information needs and qualitative considerations in statistics.

I would like to start from a user perspective and to pose the question of what information will be needed this year, next year and every year until 2030 in relation to big risks, transformation processes in society and what kind of uncertainty will be faced in the coming years. Official statistics is like a big ocean liner and if one wants to be prepared one has to start early in the preparation of new products and the adoption of a statistical programme.

For orientation, I have looked at a couple of reports, the latest one being the Global Risk Report published by the World Economic Forum (WEF) in 2021. The WEF is not regarded as being an overly environmentalist entity, as it reflects the views of world's economic leaders. Nevertheless, it expressed views that correspond with some other reports: the Stockholm Resilience Centre, the Sustainable Equity Report of the European Parliament – the socialist group – the International Labour Organisation (ILO) and the Organization for Economic Co-operation and Development (OECD) report from Joseph Stiglitz, Martine Durand and Jean-Paul Fitoussi, to which I had the pleasure to participate as an author. These reports agree asserting that there are some important challenges and threats facing our society. These are barriers to digital inclusivity, economic shakeout and social cohesion, global divides, strained health systems, climate crisis and biodiversity and youth in an age of lost opportunities.

The solutions to these problems revolve around sustainability, sustainable in terms of solving the problems of poverty and hunger in developing countries and reducing the environmental footprint of the Western world. Currently, there is no country that has achieved the goal of sustainability. The plan is to use the 2030 Strategy, agreed to by global leaders, to try to achieve this goal. In furtherance of this, they have asked statisticians to come up with indicators. The problem is that indicators are currently so numerous – they are presently 231 – for one to doubt that this is a meaningful set of indicators to help politicians make decisions. We are in this situation. While we are fighting a pandemic in the first and preliminary round, climate change is waiting for the next round in the corner of the ring in the boxing match.

My second thought is that we are in a paradoxical situation where, on the one hand, there is a data rush, a data revolution, in an era of digitisation and, on the other hand, there seems to be a death of truth. Populist politicians have brought us to this dramatic development. This has been expressed in a manifesto of the Royal Statistical Society of the United Kingdom saying, for example, that data to strengthen democracy and

trustworthiness is very, very important. When the authors say data, to be clear, they mean statistical data rather than basic input data. One month after Donald Trump became President of the United States, there was an article by William Davies stating that the statistical logic of the past two centuries seems to have been replaced by a data logic. This is the danger, that we might face a situation where we are data rich, but in a statistical dystopia rather than a statistical utopia.

The world we are living in is paradoxical, as I said, in that, on the one hand, we have the data revolution, the Internet of things, and artificial intelligence, which present big opportunities, but, on the other hand, we have to deal with societies that are divided. In our case, one could say that they are divided in at least four ways. There is the technocratic elite, which depends on evidence-based decision-making as the dogma of liberal governance. Then we have the civil society, comprising NGOs, more critical as, while they are pro evidence, they are not satisfied with the indicators that official statistics currently provide, namely the gross domestic product (GDP). Then we have something like "do-it-yourself statistics", which is a kind of solution space where everybody is producing statistics and only believing in his/her own evidence with no standardisation and no comparability. Of course, finally, we have this increasing trend of post-truth politics, a kind of contra-evidence. In addition to these four trends, we have the globalisation phenomena of economies in crisis, waiting for national statistical systems to find an appropriate solution for the challenges ahead.

Question: what is statistical information? In my terms, statistical information are (manufactured) products. This is a very important message. As Alain Desrosières would have said, they are products which are, on the one hand, not the truth but are constructed and which are, on the other hand, objective. How can we solve this conflict of objectives? We can only solve it by the codification and verification of product quality. This is the approach currently used in European statistics. When we move from raw data, through basic statistics, accounts, or indicators towards knowledge and decision, then we have a first phase of official statistics from data to indicators. Then comes a second phase where we have econometrics, model applications, and use by journalists and so forth, until we have a reduction to decision-making, so from data to facts and from facts to policy. Of course, we also have the opposite direction: policy for facts and policy for data.

In European statistics quality is determined by the Code of Practice, verified and certified through peer reviews. It includes three dimensions: 'what' the output is, 'how' the output is produced and 'who' (institutions) is producing it. I have added a last one, which is 'for whom' because I strongly believe that statistics for the public discourse are different from other types of statistics, such as for companies, private households and so forth.

It is also important to highlight that statistical portfolio is composed of different types of statistics and products: basic statistics, which are mainly accurate and very detailed with high granularity; accounts, which are not so granular, but are more coherent and consistent with theory; and indicators with a purpose to communicate and respond to a specific purpose, whereas accounts and basic statistics are multipurpose tools.

When it comes to applying all of this to environmental statistics for more than 40 years, one could say that it is important to identify episodes of environmental issues, because environmental issues call for different statistical solutions. In the first episode, in the 1970s, we had the energy crisis, quantitative depletion and the proper answer was a kind of quantitative counting of the depletion in environmental economic accounts. Then we had local regional changes of quality, no longer quantity, regarding for example local air, water or soil conditions, the first step into degradation. Then we moved to qualitative global phenomena, such as ozone or climate change. Lastly, we came to the understanding that systemic changes have to be considered, such as ecosystems, biodiversity and planetary boundaries. In addition, we currently also have to deal with the COVID pandemic and its aftermath. It is important that we find adequate statistical solutions for all of these; not every solution is fit for purpose for all of them.

I do not want to dig too deeply into this complicated picture, which is a mapping of environment statistics. It should only symbolise the big phases of different theoretical concepts and narratives, used in the past in environmental statistics and in environmental accounts. Economic responses have led to what we call an industrial metabolism, involving flow balances, input/output analysis, and footprint calculations. Then we have a capital approach, and all of them were used side by side in the SEEA, and the latest approach is now this land use and cover ecosystems and biodiversity incoming via the geographical information systems or geospatial paths, and this is the world of pure environmental statistics with the IPAT equation, the rising pressure, state response approaches and so forth.

If we summarise, we can say that we have different approaches to quantify sustainable development: to use an approach partly driven by science to keep the capital intact, the Hicksian capital approach; to assess the development of a country by means not confined to economic growth, HDI; and to maximise resource productivity, material in energy flows and so forth. We have data-driven approaches and we have policy-driven approaches, mainly the indicators, and all this leads me to the conclusion that we should combine them together in an iterative approach supporting public policymaking and long-term objectives with a short-term learning loop. This is very important for me. Long-term objectives, iterative learning loops and the entire portfolio of official statistics should be scrutinised as to whether they are fit for purpose. It is no longer adequate that we have a separate press release for GDP and labour productivity while not including a link to environmental indicators in the same press release. We have the new standards of the System of Environmental Economic Accounting and we have a first report from INCA, which will be presented later.

Lastly, I would like to address how ascertaining evidence and decision-making in policy are related to each other. Here I am going to root my comments on the *Économies des conventions*, introduced by Alain Desrosiéres and others, because I think they can help us to understand how to generate proper statistics and not only statistics that are not really fit for purpose. It is important to distinguish the particular context / conditions we are working in, be it in statistics, in science or in politics. These three systems work with different (hierarchical) logics and different cultures. Most importantly, it is essential to distinguish between the working methods of science and statistics on the one hand and those of politics on the other. With the quantitative methods of statistics, based on science, we can succeed in reducing the complexity of reality with reference to a question and distilling out important indicators. However, there is a threshold that must not be exceeded. Value judgements and decisions based on them belong (exclusively) to the sphere of politics. If we apply this to our case, I strongly believe that we have a kind of 'laboratory' where environment statistics/accounts, in collaboration with science, can achieve an aggregation, filter complexity and reduce complexity to a condensed number of indicators. There is nevertheless a limit, and the limit is reached on the borderline between observation and simulation, which I particularly see, whenever monetary valuation is applied to entire, non-existing markets. Economic valuations are necessary and common in the National Accounts; however, only at the margins of existing markets and in order to be able to close data gaps through controlled simulation. We must not and cannot go any further if we do not want to endanger the brand and the quality mark of official statistics. Monetary valuations, such as those proposed in the Ecosystem Accounts, are not part of official statistics in my opinion, but should be carried out outside as part of the 'bazaar'. I would like to link back to the French authors Alain Desrosiéres and André Vanoli; they have given us good advice, still valid and to follow in the future.

I think that we need official statistics, public statistics serving the public discourse, and it is important that this is something completely different from a research project. We need to apply the modern concept of fitness for purpose. What counts is relevance, time and trustworthiness. Trustworthiness is the brand of official statistics and we must not jeopardise this by including elements which do not fit into this brand. We have no time to lose. After 40 years of research and development, I think we should be very, very careful to continue with scientific debates which will probably not lead to answers within the next months or years. We have a pressing crisis and we need information as soon as possible and this can be done in a kind of iterative manner. The whole portfolio of statistics is at stake. If you think about the new Green Deal or the new agricultural policy, then it is not only environmental statistics. It is about agricultural statistics in an environmental form. My recommendation to the committee is to create physical accounts as guickly as possible and to understand monetary accounts as complementary information. A high priority and adequately high budgets are necessary. A close relationship with the political users and with civil society is absolutely crucial, and international cooperation is absolutely necessary in this context. Thank you very much for your attention.

# Xavier TIMBEAU

Thank you, Walter, for this very clear and concise presentation.

#### 1.2. The international context

a) European environmental economic accounts; state of play and outlook

# Jean-Louis PASQUIER, CGDD – SDES

At the statistical department of the French Ministry of Ecological Transition, environmental economic accounts are prepared and transmitted to Eurostat in line with European regulations. Given the time that has been allocated to me, I will try to stick to the major features of these accounts without going into details. CONSEIL NATIONAL DE L'INFORMATION STATISTIQUE

A European regulation covering environmental economic accounting has been adopted in 2011. It has a modular structure. The different types of accounts appear in the form of appendices. The regulation is supposed to be padded out over time as countries agree to include new areas. Originally, three accounts were introduced in this regulation and three years later, three more have been added to the mandatory accounts transmitted by each country in the Union. These accounts contain information expressed in physical or monetary terms. The approach is consistent with the UN environmental accounting framework (SEEA-CF).

Physical accounts are broken down into economic branches, in particular for emissions released into the atmosphere and for energy flows. The level of detail in these accounts is compatible with French national incoming and outgoing accounting. These tables have a format specifically designed for their use in calculations defining the environmental footprint attributed to the final request. The series on greenhouse gas emissions data is originally based on the 64-position breakdown. It goes back to 1990 and is chronologically longer than the period covered by the regulation, which started in 2008. The history of these accounts goes back to before the regulation itself. Data is therefore available over a longer period. For some of these accounts, data has been collected prior to the adoption of the regulation.

Physical accounts of material flows at the macroeconomic level are not broken down into economic branches. These accounts aim to assess the amount of materials used to satisfy the needs of economic activity. The assessment is as an approximate indicator of the pressure exerted on the environment or on natural resources. Domestic consumption of materials is a key indicator for these accounts. It can be compared with GDP to express the economy's material productivity, an indicator always featured in statistical dashboards on the sustainable development goals. Here again, the series available in France covers a longer period of time (1990) than that of the regulation (2008).

In monetary accounts, environmental taxes are not considered in relation to the goals they want to evaluate, but they usually have a physical base linked to an actual environmental impact, like energy consumption expressed by air emissions or the abstraction of natural resources (water), measuring the pressure on the environment or polluting emissions. These accounts are broken down into economic branches with the same level of detail as the accounts of air emissions and energy flow accounts. Energy is predominant in the payment of these environmental taxes, as household contributions are.

Monetary accounts aim to monitor environmentally friendly activities. They includes two aspects: supply and demand. Supply tracks the level of activity of sectors producing environmental goods and services. Demand is assessed by the level of effort in terms of expenditure to acquire these environmental goods and services by all the players living in the territory. Now, the regulation mainly focuses on expenditure in environmental protection. The part covering natural resource management is transmitted to Eurostat on a voluntary basis, but may be integrated into the regulation later. For environmental protection, the aim is to protect against atmospheric pollution and water pollution, to manage waste, to protect the biodiversity, etc. R&D covering these subjects is also factored in. In terms of management of human resources, the idea is to sustainably manage water, forests, minerals and energy resources. For the latter, these elements can have a relatively strong impact on climate policy, as the aim is to produce energy from renewable resources or conduct energy-control actions, like the insulation of buildings. Any expenditure incurred falls under the natural resources management section, but can have a positive effect on climate.

Employment is a key factor in terms of environmental goods and services. The data available here again covers a period that largely exceeds that of the regulation. The same applies to expenditure with data available from the 2000s, whereas the regulation applies to the period starting in 2014. Expenditure does increase but it still represents a relatively stable proportion of GDP.

3.5 to 4 full-time staff are employed to prepare this data within the department, with external services, specifically targeting atmospheric emissions accounts by the Technical Centre, the public operator in charge of air emissions inventories. We could also cite the work of certain public establishments, such as ADEME. All this data is available on Eurostat's online database, on the Ministry's website and the "Notre environnement" website of the Commissariat général au développement durable (CGDD) dedicated to environmental information.

This European regulation is supposed to evolve: ongoing exchanges include new accounts. Five accounts were initially planned: forest accounts and accounts of subsidies favourable to the environment, already collected by Eurostat on a voluntary basis. France answers for forest accounts. Finally, Eurostat has chosen ecosystem accounts, which are not systematically collected, even on a voluntary basis, for the time being. Some countries have started exploratory work on this subject. Extending natural resources management CONSEIL NATIONAL DE L'INFORMATION STATISTIQUE 8

expenditure or including accounts of the physical water flows has been excluded. Some statistics are collected on water, but they do not exactly take the form of an account. This collection is not completely consistent with national accounting categories.

b) The System of Environmental Economic Accounting Ecosystem Accounting (SEEA EA) and the proposal for an EU legal module on ecosystem accounting

# Anton STEURER, Eurostat

My French is also rusty, so I will speak English. My presentation is mainly on ecosystems. I will focus first on the history and the statistical and political context of environmental accounting and, secondly, on ecosystem accounts. To start with some basic knowledge, accounting creates knowledge. Accounts are systems of structured tables with an internal logic. Standard statistical tables are not accounts when they do not have some internal logic. The other important element is that accounting is a process of compilation and this process essentially tries to integrate different data sources to generate a clear picture. This way the overall information gets better and often there is the idea to have bottom lines of some sort.

In terms of accounting for the economy, things are standardised. In the European context, the system of national accounts is the European System of Accounts and it is the background for environmental accounting. We are therefore coherent with economic accounting and also with the principles set out in the national accounts. We currently have the European Green Deal and environmental accounting development, as it is now being discussed, has to be seen as embedded in this context. The European Green Deal is the new EU growth strategy to make the EU sustainable by turning climate and environmental challenges into opportunities. It is the first priority of the current European Commission, which will be in power until 2024. It is a transformative agenda, which, if successful, will change many components of our economies and our lives. We will have new energy systems and new transport systems. Our buildings will be different, the way we produce will be different and our physical abilities will be different. It has a crosscutting and holistic approach linking many aspects together and of course it is guite a challenge for statistics, which is why the European statistical system has developed an action plan for statistics for the Green Deal. A draft regarding this is being presented to the ESS Committee, where the presidents of the statistical offices will hopefully come together for approval in a few days.

The action plan is in line with a multiannual work programme of the European Statistical System. It is not a new work programme. It aims to streamline and coordinate statistical activities considered as particularly relevant for the European Green Deal and to help prioritise those relative to other areas. The plan has three main categories. The first is enhancing communication and dissemination, which basically means finding better and more efficient ways to sell things to users that they want and in the form they want it. We have a number of plans, including a Green Deal monitoring dashboard, where we would use appropriate indicators. For example, we are working on quarterly green house gas emission estimates based on annual accounts for air emissions and on updates of legal basis. A delegated Act will update the current regulation on European environmental economic accounting. It is a sort of fast track, because it just changes a few deadlines, makes things faster and more detailed. There is also an amending Act, which is a full legal procedure, with the three new modules on forests, environmental subsidies and ecosystem accounts. Then there is a third strand, where we would go beyond the legal basis doing developments, for example, further developing EU-level ecosystem accounts, which are estimates, and also material flows for Member States, where we would mix estimates and what Member States are doing.

To return to the topic, environmental economic accounting, the system of environmental economic accounting (SEEA) is the global reference for this work. First, there is the SEEA central framework, including a number of accounts, adopted as a statistical standard in 2013 by the UN Statistical Commission. At the same time, the SEEA Experimental Ecosystem Accounting Handbook was not considered ready for enforcement. However, at the same time, it has received more attention than the central framework, and in 2018, in view of the progress made, it was decided to make a revision. It was successfully completed by the UN Statistical Commission, adopting the revised handbook and the SEEA ecosystem accounting, earlier this vear. The first seven chapters of the book, covering the framework and physical accounts, were adopted as an international standard and there are internationally recognised statistical principles and recommendations for chapters 8 to 11, covering the monetary valuation.

Here are some of the key concepts of ecosystem accounting: ecosystems are a key component of natural capital. There are a few other, such as subsoil assets. The main aspect is that ecosystems have the potential to produce ecosystem services and provide them to the economy and society. Henceforth, they would apply the principle that supply equals use, so if there is no user then ecosystems would not generate CONSEIL NATIONAL DE L'INFORMATION STATISTIQUE 9 a service, at least not for people in that area. Services are typically grouped in three main groups: provisioning services, for example, the ecosystem would supply fish, timber or other products to harvest; regulating, for example, protection against flooding; and recreational, for example, the opportunity to walk in a forest.

In an overview of the system, there are some core accounts. These are: ecosystems' extent, meaning the size of ecosystems; condition accounts, the quality of health of the ecosystems; services accounts, the supply of services by ecosystems and the use of services by different economic sectors, and this would be in physical terms and in monetary terms; and asset accounts, which would be monetary. It is also possible to do thematic accounts for special areas, for example, for marine or for carbon or for urban areas or for protected areas.

The compilation of ecosystem accounts is relatively complex, because it means combining a large number of sources. The information we have about biodiversity and ecosystems is not tailored. We have information about land use, land cover, some protected areas, certain species, but it is all rather scattered and it is not currently an integrated system. Ecosystem accounting requires integrating a variety of sources, including data from soil sampling, from species, about pressure and most of it is administrative sources, data that can be linked to ecosystem services, such as agricultural production or recreation activities. Most of the time models are needed, because standard observation systems are not available, for example, the production of ecosystems and this requires computer power and cooperation among institutions. What we have seen in countries is that synergies can be generated through cooperation and the data gets better and it becomes cheaper to do these accounts quite quickly.

In terms of uses of ecosystem accounts, what is the value added? A main value added is that there is an integrated framework, forcing the data together, and of course there is regular production, which is not often the case. The data structure allows us to be strategic about development of new sources. What we currently see is that many sources have been developed individually not in relation to to other sources, so there is one regulation on certain things and another regulation on other things and it is not thought about in an integrated way. The ecosystems services idea is relatively novel, so applying standard economics to ecosystems. This actually produces something useful in an extended economic sense, which also helps us recognise the role for normal standard economic decisions. It also allows certain analyses, such as tradeoffs between users of ecosystems and between different services. For example, the more agricultural production you expect the more typically managed the area becomes and the lower other services provided will become.

At the EU level there has been for years an INCA project offering different EU services. The idea is to develop and estimate EU ecosystems accounts to develop the methods, find sources and produce results. It is also designed to help a process called MAES: Mapping and Assessing Ecosystems Services, which is a relatively big exercise where environment ministries, nature protection agencies and similar entities in Member States are involved. One element, not the most important, but one element is that it includes an estimate of a set of ecosystem services in the EU and the estimate was EUR 230 billion in 2019, so it is an annual flow, which is about the size of agriculture in terms of contribution to GDP.

At the national level a number of countries have done some experiments in accounts, some of which are guite advanced. Others have not done anything at all. There are research projects, for example, the MAIA project, including about 10 Member States and Eurostat has given grants for some years, so there are experiments done by statistical offices. The other main element is the proposed legislation. We have proposed an amendment to the regulation on European environmental economic accounting and the timeline is that by the middle of next year we should have the commission's proposal and the first mandatory reporting would probably be in 2026. In parallel, we are developing tools that Member States can use and we are continuing with grants to Member States. There is now a task force on ecosystem accounting, of which France is becoming a member, advancing tools and concepts. The idea we have is that we will have estimates for the EU, at the EU level, and as national data becomes available that would replace the central estimate we have. This is an approach we are taking in a few other areas as well, for example, in the footprint area.

In terms of the proposed legislation, first, it is important to say that the proposal is not yet stable. There was a discussion vesterday among the directors of sectoral and environmental statistics and accounts, during which Member States discussed a proposal, which will be developed. Henceforth, we do not have a stable proposal yet, but basically what it covers is extent accounts, condition accounts and services accounts. The extent and condition accounts would probably be three-yearly, whereas services accounts would be annual. Currently the proposal is to have both physical and monetary needs for services, but this is probably not CONSEIL NATIONAL DE L'INFORMATION STATISTIQUE

going to happen. The ecosystem types we want to have in the regulation are very aggregated. We would obviously assume that the compilation is at a finer level. However, this is more or less what MAES is also using. An important point is that it includes marine ecosystems, but there is no service from the ocean in the legal Act, so it is only the extent account that would be covered in the regulation. We are thinking of dropping water purification from the list of ecosystem services, because some Member States have indicated that maybe it is too much compilation work or the data may not be certain enough. That is, however, still under discussion.

The task force has met several times and it will meet again in a week, and then it will meet again in December to continue discussions. The directors of sectoral and environment statistics and accounts discussed the proposal. The main suggestions from this meeting were that the legal proposal should be simple, maybe simpler than it is currently, and that monetary accounts should be started later, if at all, than physical accounts, and we will make a revised legal Act, which will be presented for written consultation in mid-November. Then I mentioned the timeline, so once again before the summer next year there would be the commission proposal, so probably it would not have to be dealt with by INCA during the French presidency, but it would come later, but we do not know. Then there would be deliberations in the Council and Parliament, which we expect take time. Based on experience, it can take one and a half to two years, so the amendment that would include ecosystem accounts would enter into force at the end of 2023 or in the first half of 2024, and then the end of 2025 or 2026 would probably be the first reporting of this data, so this is the context. Thank you very much.

# Xavier TIMBEAU

Thank you very much, Anton, for this presentation. Jean-Marc Germain has a question, which I can maybe rephrase: is there any assessment of the current appropriation and application of environmental accounts by Member States?

# Anton STEURER

Yes. I think the EU is leading worldwide. There are very few countries, which have many accounts. For example, some countries in the G20 do not have air emissions accounts. Of course, we have them. Inside the EU, we of course have some countries taking a leading role. I do not want to mention any name, but we know which ones are more advanced and which ones are less advanced. There is an international assessment by the UN every few years of the implementation of SEEA. Maybe these results could be shared with the commission.

# 1.3. Ecosystem accounts

a) Application and implementation of ecosystem accounting in Europe. Outcomes of the INCA project with a focus on Ecosystem Services accounts and their possible uses

# Alessandra LA NOTTE, Joint Research Centre – European Commission

Good afternoon. Thank you for inviting me and providing me the opportunity to share with you the outcomes of this INCA journey that started five years ago. I work at the JRC and specifically on ecosystem accounting as part of the INCA project. INCA is the acronym for Integrated System for Natural Capital Accounting and this project is a European partnership meant to test, develop and implement the SEEA EA framework. It is led and coordinated by Eurostat. As JRC, we work on implementing the best available knowledge on ecosystem service modelling to build ecosystem services accounting. The best report that summarises INCA's outcomes after phase two, which ran from 2016 to 2020, is the one published in June 2021 (ref. https://ec.europa.eu/eurostat/web/products-statistical-reports/-/ks-ft-20-002). There is also an INCA website (ref. https://ecosystem-accounts.jrc.ec.europa.eu/), where you can download the outcomes of the project in tabular format or map format.

I would like to use the time that I have now available to share with you some outcomes that specifically concern ecosystem service accounts. There is the potential from the ecological side to provide a contribution to humanity. From the interaction between ecological and socioeconomic sides, flows of services can be generated from a number of ecosystem types, such as croplands, woodlands and wetlands (supply table), to economic units, such as agriculture, forestry, fishing and manufacturing, and also to households (use table).

For example, in terms of crop pollination, on the ecological side we may have habitats suitable to host wild pollinators' nesting. On the economic side, we can find the location of pollinator-dependent crops. When the interaction between the two sides matches, we can have the crop pollination service provided to the agricultural sector. Is increasing the actual flow of the crop pollination service always ecologically good? It is for sure always economically good, but if we look at the change over the last 12 years, since 2012, we see that the increase was led by the socioeconomic side. There was an increase in pollinator-dependent crops, but there was not an increase in the availability of habitats suitable for the nesting of wild pollinators. It is therefore important to have a clear identification of the role that both sides play in this interaction process.

On ecosystem services, when we record a match, this represents the actual flow; however, there can be cases when we record a mismatch between the ecological and the economic side. Let us go back to pollination. On the one hand, we have habitats suitable for pollination and the presence of pollinator-dependent crops; on the other hand, we can also find out that some pollinator-dependent crops are located where there are no habitats suitable to host the nesting of wild pollinators. This can actually be a quite interesting information for policymakers.

Let us move on to how this set of accounts can be used. There is a first set of uses that is straightforward. E.g. from the supply use table from which you can calculate percentages, set ranking and so on. There are other uses that require further processing to elaborate other indicators, or to bridge ecosystem services supply use tables and economic tools. Last, but not least, INCA can also contribute to international reference frameworks that already exists.

Let us try to see how this list becomes concrete. Woodland is the ecosystem type providing the largest number of services, followed by cropland. The economic sector that benefits the most from the nine types of ecosystem services accounted in INCA is the agricultural sector. Furthermore, households are remarkable users. This confirms the importance of assessing ecosystem services, because a considerable part of these flows does not pass through the market. It goes directly to the society. In terms of the trends in ecosystem services flow, we have already seen the case of crop pollination, but there are other examples. When it comes to crop provision, changes in the annual yield do not imply changes in the ecological contribution, or the fact that there is an increase of more than 20%, for example, in nature-based recreation is not totally led by the ecological side. In fact, it does imply that there are more natural attractions; but also that more people live nearby to already existing natural attractions. Monitoring changes and trends over time therefore requires attention when interpreting these results. I think this is even more evident when we consider flood control. In the case of flood control, the ecosystem service plays a protection role in some areas, specifically where there are human settlements or economic assets.

What happens when there is a change? For example, in the year 2000 there was a low number of human settlements in floodplains, but in 2012 the number increased. There was an increase in the ecosystem service flow, not because there was a higher number of service-providing areas, such as woodlands, but because there was a growing number of human settlements in floodplains (i.e. in areas that needed protection). This is crucial information.

This is another tricky question to be addressed, because in some cases ecosystem services are located where there is a demand that in turn is concentrated where most of the population live. However, if we consider those ecosystem services on overarching environmental targets (that go beyond national boundaries), then we find regions with a limited population, but very rich in nature which provide services. This is another indicator that can be easily computed starting from supply and use tables and their spatial allocation.

Another question that we can address is how to assess sustainability in agricultural production. In this case, one may look at agricultural statistics and rank the countries that record the highest yield. However, when building a sustainability scoreboard, there are other elements to be added to crop yield. Looking at ecosystem contribution, rather than total production, one may find out that the ranking of countries changes significatively. It makes sense, because the ecological contribution to production differs from the production itself, which can be the result of intensive agricultural practices and/or monocultures, where ecological contribution is very low.

What are the driving pressures? This is a question concerning ecosystem services embedded in the products that are traded. It is possible, for example, in the case of water purification, to find out that countries that are the main polluters in terms of nitrogen input (i.e. use of mineral fertiliser in agricultural practices) are the ones that export the largest part of agricultural products. In this case, we need information not only from

the production side, but also on the consumption side. I.e., one country produces something that is exported to other countries that import commodities whose production generated a high level of pollution.

Another question that can be addressed is: what are the economic impacts of changes in ecosystem services? This example enables to bridge ecosystem services accounts and economic tools. Let us consider the example of pollination; the exogenous event that shocks the overall production is an invasive alien species (the Asian hornet). This has an impact on agricultural production, specifically on pollinator-dependent crops. Thanks to pollination accounts it is possible to calculate what the shock percentage generated by the Asian hornet invasion. The shock percentage can be directly applied to economic models. For example, we used the GTAP general equilibrium model by shocking the critical variable already present in this model, that in turn assesses what could happen in affected countries if nothing is done to stop the spreading of the hornets in other regions. We can see that we could have a decrease in vegetable and fruit production and exports and an increase in vegetable and fruit import prices. This is something we could already intuitively expect. However to have the causality track that enables us to guantitatively assess it, could make the difference. I would like to highlight that in this case we did not create an ad hoc tool for the economic side. The tool already exists. It was a matter to find a consistent and coherent bridge; ecosystem services accounts can provide this bridge.

A last example I will mention concerns the fact that although we had only nine ecosystem services in INCA, we are able to calculate a relevant number of indicators that can be useful in international reference system, such as the Post-2020 Global Biodiversity Framework and also the Sustainable Development Goals. If you have any questions, please do not hesitate to contact me. I thank you for your patience.

# Xavier TIMBEAU

Vincent Marcus will now present the state of play of the Ministry of Ecological Transition and its statistical department regarding environmental accounting.

b) The French Efese approach and its links with economic accounts

#### Vincent MARCUS, CGDD

I manage a sub-division of the economics and assessment department, which is not formally part of the ministerial statistical department. This does not stop us however from working very closely with our colleagues, especially on these subjects. I propose to organize a zoom conference on some of the work our department has done in the assessment of ecosystem services.

L'évaluation francaise des écosystèmes et des services écosystémiques (Efese) is a research and knowledge production program launched in the early 2010s to highlight the condition of biodiversity, its evolution, show values related to these issues and make sure that the issues linked to the preservation of diversity are better integrated into public decision-making. This program finds its inspiration in the previous national strategy and in the Chevassus-au-Louis report on the economic assessment of biodiversity and ecosystem services that had drafted specifications on that subject. The Efese is based on a structured framework that has tried to replicate, quite modestly, the operating mode of the IPBES. Besides figures, the program issues messages and recommendations, articulating scientific and technical issues, for easier ownership by civil society.

Initially, we reviewed six major types of ecosystems and conducted targeted evaluations on a number of services, with a quality assessment of the condition of ecosystems, their evolution and ability to deliver the services expected from them, as well as our own ability to make more or less substantiated comments on these questions. Behind the term evaluation, in the program's approach, we try to include all values. We do not have a narrow or strictly utilitarian vision. Even though it can be difficult to give them a monetary value. we strive not to forget environmental values or values that we link to the existence of the ecosystem, independently of any benefit we could draw from them.

I would like to look in greater depth at a few evaluations made as part of this programme.

We evaluated the services related to the use of inputs (nitrogen and water) in farming to try to assess the share of the operation of the ecosystem in total agricultural production. The agricultural ecosystem rarely works alone. It requires a lot of human intervention. The work therefore consists in highlighting what the ecosystem would produce alone and what it produces with a human input. We estimated that between 50 and 65% of production could be attributed to the ecosystem's own services. We then applied this percentage CONSEIL NATIONAL DE L'INFORMATION STATISTIQUE

to the total merchant value of agricultural production resulting from agricultural economic statistics to determine a value for this input service at close to 10 billion euros. This share of agricultural production produced by the ecosystem itself hides a considerable simulation and calculation workload taken on by the INRAE. A similar exercise was done on pollination. We try to assess the share of farming production that depends on pollination. We apply it to the total plant production value to obtain the value of the service.

We have in fact tried to give a value to the carbon sequestration service. When the ecosystem is deteriorated or destroyed, it is necessary to evaluate the re-emission of carbon stocks already stored in the given ecosystem and the loss of the ability to sequester carbon annually in the future. We have introduced uncertainty factors into this ability to sequester carbon, according to the different climate change scenarios. This sequestration ability is then valued with the shadow price of carbon, which is not the same thing as the cost of damage. These values can be input into a monetized account of ecosystem services and the valuation of non-merchant environmental benefits in investment projects, namely infrastructure or transport projects consuming natural spaces and ecosystems in general.

For the forest recreation service, we estimate the usage value based on the method of travel costs and marginal value related to the different characteristics of forests. To do it, we relied on a specific data collection from households traveling within the forest and the quite massive use of cartographic data on forests and their characteristics. With this method, the recreational use value is estimated between 16 and 35 billion euros depending on whether or not the time opportunity cost is taken into account and largely exceeds the sole merchant value of wood production. Based on the survey and travel choices of the households questioned, by referring to the features of forests and using well-known econometric values in the economic literature, we can give values to the different forest features and give an idea of the loss of value linked to the destruction of certain forest surfaces.

Studies are ongoing in terms of outlook. We are trying to develop the production of values to support public decision-making frameworks. The study of the mapping of ecosystem services in the Greater Paris area thereby tries to factor the values of ecosystem services in development scenarios. We are trying to move towards systematization to improve the geographical coverage of these services and integrate new services, like the benefits gained from the good condition of water masses.

In the preliminary INCA report, France was not very far ahead on accounts. However, this remark is not completely accurate. Data does exist. Some is broadly used to produce accounts, in particular on forest or agricultural production. In other fields like recreation services, this data forms bricks to build future ecosystem and ecosystem service accounts.

Before addressing monetary valuation, it is necessary to quantify the service. This quantification requires considerable work or specific investments. The questions we raise when we look at the value given to ecosystem services can arise from the way we define and quantify the ecosystem service as such. There are several methods available for valuation. They are effectively described in chapters 8 to 11 of the framework. Their relevance, their mobilization and aggregation however do raise a few issues. These values have meaning and are part of a context. They are explicitly or implicitly constructed around a counterfactual scenario making them summable. I believe that we will have the opportunity to discuss this within the Eurostat task force, of which France is a member.

# 1.4. The viewpoint of users for research and public policy

How to promote a useful, parsimonious and inclusive measurement of ecosystem condition through ecosystem accounts?

# Yann KERVINIO, Centre international de Recherche sur l'Environnement et le Développement

I suggest focusing on biophysical measurement to assess this issue of monitoring the sustainability of our relationship with ecosystems and see how the development of ecosystem accounts could promote a useful, parsimonious and inclusive measurement of ecosystem condition. We find certain considerations addressed in the previous presentations.

To start, we will address the ecosystem condition. Then we will concentrate on how to define and identify the dimensions of interest of ecosystem condition. Finally, I will address the old debate on how to ensure sustainability at the national level by taking the example of an use.

The SEEA-EA provides a framework defining the ecosystem condition. The account system has a spatial dimension. This spatial grid is used to organize information to ultimately produce indicators. The text does not specify if the production of indicators is part of fiscal year accounts or not. The directives indicate that it is a possibility. The production of indicators can be off the books and there is a diversity of data and users. In their structure, these accounts have several levels, including the physical part, recently considered as a statistical standard: the extent, condition or physical part of ecosystem services.

According to the SEEA-EA, the measurement of the condition depends on the expected use of these accounts. One of the first stages consists in defining the characteristics of interest. The framework remains relatively open, even though it proposes a certain number of options to organize the monitoring of the ecosystem condition. The selected data must be useful to a wide range of users. I propose two approaches, the value concept or ecosystem management objectives. These two approaches provide a base to identify the dimensions of interest for a variety of uses.

In ecosystems management, IPBES and Efese frameworks show that there are various considerations to take into account; use values related to the uses made of ecosystems and their impacts on well-being, socalled environmental values linked to aesthetic and ethical considerations. There is also the idea that ecosystems are complex and that identifying simple causalities in such systems is not easy. It is therefore also necessary to approach the systemic component of ecosystems.

Efese proposes to consider ecosystem services for use values. An ecosystem service is not a simple object. It involves the connection of two objects: the ecosystem's ability to satisfy needs and, when there is a use, benefits or costs, the benefits being defined as an increase of a well-being indicator. The figures proposed do not always cover the same scope. Sometimes, they represent a fraction of the benefit that can be attributed to the operation of the ecosystem. Attributing a fraction involves a conventional part that is not always explicit. At the same time, environmental values often identify an element in an ecosystem (a species for example) and express conservation goals. Ecological values express the idea of a planetary limit. This is the reference framework of the last report on the state of the environment in France. These approaches focus on the complexity of the ecosystem and importance of not exceeding certain limits beyond which we ignore how the system would react. With this in mind, attention must be paid to the resilience of systems.

These three different types of consideration target relatively distinct goals. Henceforth, it is easy to organize objectives observed in public policies into these categories. Each descriptor of Directive 4 on marine environments covers all the dimensions on which Member States define environmental goals that, in France, have been added to the strategic document on the shoreline and have a certain legal clout. We can link some of these descriptors to the idea of maintaining the overall functionality, for example, the idea of not excessively disrupt food chains, eutrophication, plastics in marine environments, etc. Descriptor 1 includes considerations linked to the will to preserve certain elements in marine ecosystems whereas descriptor 3 is based on considerations linked to ecosystems' ability to support economic activities, commercial species, and fishing resources. Finally, descriptor 9 is linked to the ability to host fish farming activities. Most objectives are in these categories. They can be observed in integrated ecosystem management frameworks.

In the SEEA, the organizational categories of the condition are different. The framework uses the conditions of natural sciences and the link with goals is not always immediately apparent. It is however possible, through this debate on values and existing goals, to define a more useful structuring of condition accounts. It is regrettable to have separated the biophysical from the monetary and to have left economists with only the monetary aspect when, in economics, considerations can help to identify a way to structure goal-related items.

This structuring can prove useful, especially in exchanges on the measure of social progress beyond GDP. The Stiglitz, Sen and Fitoussi report, published in 2009, insisted on the idea of the necessity to "shift emphasis from measuring economic production to measuring people's well-being. And measures of wellbeing should be put in a context of sustainability". Supporting sustainability in statistical systems raises two guestions: having a more holistic vision of life guality with value-defining indicators for certain sustainable pathways and making the measurement of sustainability as a social progress criteria and being, for example, capable of measuring the damage of ecosystems in statistical systems and reporting it concisely and clearly. On this second point, the report promoted the idea of a dashboard rather than the green GDP. Some criteria to monitor sustainability were proposed (precision, concision and structure) in the measure of social progress.

One can see the potential value of an ecosystem account system in producing this dashboard. There are currently two major types of dashboard: new wealth indicators comprising two indicators - the carbon CONSEIL NATIONAL DE L'INFORMATION STATISTIQUE 15

footprint and artificialization; and the monitoring of sustainable development goals including 25 indicators linked to the sustainable management of ecosystems. Are these indicators enough? If all the indicators are green in these dashboards, can we claim that our development mode is sustainable? That the deterioration of ecosystems is under control? There is no guarantee. The sustainable management of marine environments has richer indicators than the monitoring of SDG14 relating to marine environments. SDGs have also been criticized for their lack of parsimony. Admittedly, it is necessary to track a certain number of dimensions. However, would it not be possible to build concise indicators from monitoring systems that could be included in a more succinct dashboard? To answer this guestion. I suggest to explore another direction.

Some management frameworks already require the measure of the ecosystems deterioration costs. In the initial assessment, in line with the framework on marine environments for example, Member States are asked to assess the cost of the deterioration of marine environments. Discussions on these issues emphasize that two approaches are possible. The first consists in studying losses of well-being linked to the condition observed, compared to a reference condition. The second is based on the maintenance and restoration costs. This second perspective, within the framework of French accounting, is similar to the nonpaid ecological costs approach proposed by André Vanoli. We could propose that this measure becomes one of the indicators of a concise dashboard. It is nevertheless necessary to have data structured in line with the management goals, as they have been defined. However, ecosystem services cover 2 out of 11 descriptors. Several management goals are defined in view of different considerations to the given ecosystem service.

The proposal is to organize the condition account between the dimensions linked to the supply of specific services, dimensions related to what has to be conserved in ecosystems and dimensions related to the guarantee of maintaining the functionality of all those ecosystems. It would be possible to organize such accounts in the short term. Public policy, goals and monitoring systems are already up and running. It is therefore achievable in the short term. The rollout of monetary accounts on this basis raises more questions. This structuring is a prerequisite to produce accounts and different stages need to be followed. Deriving required costs is a normative dimension involving the fixing of reference levels and providing a modelling and scenario dimension. It is possible to question whether this exercise is limited to pure observation. Including this exercise in an accounting framework would provide reliable information, which could be used in several situations.

To conclude, the development of ecosystem accounts could be very useful to build our monitoring capacity and the sustainable management of our development modes, namely our relationship with ecosystems. If we want to promote a measurement that is useful, parsimonious and inclusive, not systematically blocking some key values in the way we sustainably manage ecosystems, it must take into account three categories of motivation, resulting in their effective monitoring. These three categories are maintaining the overall functionality to legitimize the monitoring of pressure in an ecosystem account framework, the ability to satisfy specific needs of populations, and the conservation of remarkable elements in these ecosystems.

# 1.5. Exchanges

# Xavier TIMBEAU

I will hand over to the floor. A trend does appear in the guestions: it is urgent to look into the environmental guestion and have the right tools to identify priorities. The feeling also emerges that environmental accounts are ambitious, but they do not directly meet very practical public policy questions.

# Yann KERVINIO

For carbon, ecosystem service accounts can introduce biases on what would be appropriate to monitor to make sure that natural capital is capable of satisfying the issue of developing resilient carbon stocks to deal with climate change and potentially stimulate them. Often, accounts present a current carbon stock and a current carbon flow.

In the Efese study on carbon sequestration services, the shadow price increases in line with discount rates. However, long-term dynamics are not at all negligible in the service's value. It is necessary to take into account sequestered carbon together with its long-term risk of non-permanence. This consideration emphasizes the idea of monitoring carbon stocks, not in a very short-sighted way, looking at what is happening now, but by looking at the resilience of an ecosystem, the sustainability of the carbon it sequesters with respect to this service and on future potential dynamics of that ecosystem in this environment. There is a risk incurred in developing ecosystem service accounts focused on current flows. CONSEIL NATIONAL DE L'INFORMATION STATISTIQUE

For carbon, it is necessary to take into account the long-term dynamic and the management of ecosystems' ability to adapt.

If we look at the monitoring system, there is a more important issue consisting in asking ourselves if French forests are resilient to climate change and in monitoring some characteristics of these forests in relation to the resilience capacity of these systems. This leads to promoting the stock logic in the monitoring of the sustainability of ecosystems, even through the input of ecosystem services.

# Xavier TIMBEAU

Perhaps the French accounting framework, consisting in providing an annual snapshot by giving a quantified value to an aggregate, is not the ideal method to provide a good alert signal on the risk of the catastrophic deterioration of a specific ecosystem. This snapshot would not allow considering some tipping points. Specific monitoring of some indications would be preferable, with predictive models to determine what is bringing us close to the breakpoint. It is important to be precisely aware of the location of the risk. From this point of view, the annual accounts approach is not the most appropriate.

#### Jean-Marc GERMAIN

I asked a few questions on valuation methods that diverge depending on the approaches used. It seems to me that for environmental economic accounting, a rather systemic method had been proposed, consisting of calculating the cost of recovery to the original condition or offsetting of damage caused. However, it appears at this stage that this quite simple and wide-ranging method has not been chosen for ecosystem accounts. The subject of valuation deserves its own session.

We however need to set up accounting by focusing on elements that have no market value and are crucial (such as  $CO_2$ ) or with a market value that is totally at odds with the consequence of exhaustion of the resource that we can estimate. I specifically have in mind the value of sand, which is probably highly underestimated with respect to its economic value if global growth scenarios continue. I believe in fact that Eurostat calculates the material footprint in value and not simply in volume. This value takes into account the depletion of resources and corrects market prices where necessary. In my opinion, this approach is essential in a world in which we are looking to 2050.

We need to use the competition between resources to re-establish biodiversity at an acceptable level to fight CO<sub>2</sub> emissions, avoid excessively fast consumption of uranium resources, etc. Over and above environmental goals, social goals also need to be pursued, especially the balancing of pension schemes. We need to initially focus on volume indicators, but also evaluate the natural capital, as the Quinet commission did with carbon. We will not have an exhaustive vision of the actual depreciation of the physical and natural capital. However, we will start to see a gap between the depreciation of the physical capital as we measure it and the reality of the use of resources, including with macroeconomic indicators that can be deduced, such as a net adjusted saving of this depreciation. I believe that it is urgent to create minimal accounting consistency frameworks within a short timeline given European, national and international political agendas.

#### Luc MAUCHAMP

We can always improve statistics and the quality of accounts. One of the great failures comes from the very poor political use of this data. Very good statistics, produced over a long period, announce disasters, but politicians do not consider them in evidence-based policy. Every time technical improvements or work designed to improve knowledge or quality of data are proposed, but if the report remains on a desk and decisions are taken via Twitter, it all adds up to nothing.

I take the example of the report on SDGs and the Sas Act of 2014, suggesting the creation of new wealth indicators prior to the annual budget, explaining how the previous budget has improved these indicators and how the future budget will improve them further. I believe that this report has not been drafted over the last couple of years. In all cases, it has not been discussed in-depth by the Parliament and has no impact on the vote of specific measures. Systematic integration of all this work would be necessary to ensure that it arrives at the right moment in the decision-making process. We have worked for a long time on the physical or socio-economic indicators of biodiversity. Nevertheless one can observe that decision-making is based on emotions, personal convictions or opportunism and not at all on real and objective, evidence-based considerations that would guide decision-making in a rational way.

#### Walter RADERMACHER

I would like to share some comments that may be provocative concerning what we are aiming at with ecosystem services, in particular combined with ecosystem service monetary valuation. In my understanding, the loss of ecosystems and the loss of biodiversity is a pertinent global risk to us. It is no longer something where we have choices to make at the local level between investing in something or doing something in a sustainable manner in a specific economic sector or not. We are fighting a global risk and we have to fight in a manner comparable to poverty, hunger, income distribution problems and so forth.

Why do I introduce this? Because I think that we have to bear in mind that this is a question of scale. Valuation approaches, applied to ecosystem services, are developed for small-scale projects, with a kind of neoclassical cost-benefit logic in mind, and I would agree that this is the level where small-scale valuation of ecosystem services is appropriate. This could also be done within official statistics, because the assumptions we have to make are relatively marginal, because we expand the existing markets a little bit. However, when we come to larger-scale problems then we face larger-scale valuation items and issues, and these are no longer in my view solvable without running into many, many paradox situations, because we have to simulate entire markets and they are complex, as we know. As an economist, I could say there has been a political system that tried to simulate markets: it was the Soviet Union, and the Soviet Union failed, as we know, so I think that we should not try to make the same mistake simulating entire markets, and if we do it, we are no longer in official statistics.

Thirdly, as the speaker before me was introducing, many services are not economic services. They are environmental or ecological services. They ensure ecosystems resilience and if we do not take them into account in our enumeration of services and only look at the economic services, the social services, then we might follow this so-called streetlight syndrome that we only measure what we see and what we can measure and evaluate. All this brings me to the conclusion that we should focus on a proper inventory on an annual basis of changes in ecosystems and their condition and we should think about adding biodiversity with small, let us say, simple indicators, like insect biomass, but not putting a big chunk of the money on a continuation of valuation of ecosystem services. In any case, I think it is not to be stamped official statistics at the end. Thank you.

# Anton STEURER

I have just a few comments based on various elements previously mentioned. I do not know how helpful it is. First, I see ecosystem accounting as I have presented it at least, is only one element of a much wider set of information. There are specific expert information systems, kept by the respective administrations and they are often sufficient for their purpose. They do not need accounts to protect particularly valuable ecosystems. It is therefore one element and, of course, physical accounts would be first, so monetised accounts – because there was quite a discussion about this and this is often the case – but probably it is more important to get the physical ones first. There, my view is the big value is in integrating the information we have, because we have a lot of information, but it is not easily usable and we cannot even produce a data strategy, because we do not have a clear view of all these numerous datasets. We made a list of sources we could use. It came to over 50, and they were never designed to be put together, so it is confused and hopefully making these accounts helps.

Furthermore, in my view, accounts are a structural change observation tool. They are not for catastrophes. They are based on the idea that we are on the road where we are eking out pieces nature and we have to manage more and more of what has been outside of our societies and our economies in the distant past and in another 100 years we will be at a 100% managed planet. This is the kind of idea, so we are integrating more and more of what has been outside.

This brings me to the money issue. There are two main issues. One is that our initial estimate brings ecosystem services to the same level as agriculture. Of course, everybody knows that if there was no food the value of agriculture would not be 2% of GDP. The same is true for water. I think that water supply is certainly below 0.5% of GDP in the EU. If we did not have any water, this would probably not be the case. It is only inside the system that information makes sense, not outside of it, and the same is true of health. The other key issue is that we are often in an area where there is not yet a market, so we are seeing all these trends. They are slow – such as with carbon farming, getting money for sequestering carbon – but in another 10 years all the carbon flows in Europe could be paid for. We get payments for protecting ecosystems. The next generation of the Common Agricultural Policy moves a step in that direction. In another 20 years, we will probably be much, much further on this, because as these things get scarcer they will move into the market.

I think one of the elements is really that we will get better if we try. If we do not start trying and working and putting a few people on this – we had a several very impressive presentations – if we would run this regularly and if we had a few committees to look after it, it would get much better, more comparable, cheaper and would yield more usable information. To what extent it would be statistics and to what extent it would be other areas, I do not know, but I think there is this long-term trend going in this direction. Thank you.

#### Jean-Luc TAVERNIER

In these areas, we face many obstacles, including linguistic ones. We are very far from a situation where a large number of people addresses questions that are however absolutely key.

A rather central question emerges from the different presentations: should monetary valuation be considered as part of public statistics bodies or as research? There is no doubt at all that we absolutely need biophysical statistics. Like Walter, I would agree that the question of monetary value for the time beings is the prerogative of research and it would be difficult to try to perform a monetary aggregation of elements that are not susceptible to be aggregated.

We want a single monetary and financial standard when decision-making between different choices is possible. Having a shadow price for carbon is therefore interesting as it is necessary to take decisions in terms of carbon reduction. However, we are not sure of having to choose between singular environmental issues - climate, biodiversity, condition of the oceans – that are crucial for civilization. Is it really worth setting the same standard when we are not sure whether decisions are possible between the different phenomena? We can follow the idea that our resources are limited and it will be necessary to choose to return them to their original condition between different uses. In this case, it is nevertheless necessary to avoid threshold effects and irreversible damages.

Having a choice in the use of limited financial resources to avoid irreversible damages on different aspects of environmental sustainability can justify decisions. When we measure the services rendered by ecosystems today, we are not heading in the right direction consisting in measuring the cost of repairing needed to avoid irreversible damage. I therefore wonder if we are really addressing the subject of environmental sustainability that we will need to tackle. In my opinion, at this stage, the subject falls into the realm of research that I would gladly welcome at Insee. It is on the other hand difficult to define regulations leading to monetary valuation rules. I am not sure that this would fall into the field of public statistics in the strict sense of the word.

# Xavier TIMBEAU

The topic is complex. I believe that the question is important, speculative and not linear. In this moving landscape, one indicator is not enough to inform public policy. There are so many hypotheses that this indicator would be ineffective and could tell reassuring stories when we need to worry or worrying stories when we need to be reassured. Henceforth, we need to ask ourselves which elements are needed to fuel the debate and help the decision-making process.

#### Clément SURUN

The Banque de France has worked on an extended incoming and outgoing table including sectoral biodiversity footprint data. Are these statistics not relevant? They allocate a form of responsibility to the different economic sectors. Founded on physical data, it seems easier to set up initially than costs to achieve public policy goals.

I have closely followed the work of the Criqui commission, published in June on the France Stratégie website. It proposes an alternative approach to the work of the Quinet commission, based on the calculation of technical costs to achieve carbon neutrality goals. Could other work of this type be envisaged by public commissions?

Lastly, I would be interested in knowing the opinion of the Ministry of Ecological Transition and of Insee on the reasons for which the work on the calculation of ecologically paid costs, published in Nature and the Wealth of Nations has not been pursued?

#### Xavier TIMBEAU

Given the time, I am not sure that we can answer all the questions. I suggest that we move on to discuss the opinion. I would like to thank the General Secretariat of the Cnis, namely Cristina D'Alessandro and François Guillaumat-Tailliet, who has replaced Isabelle Anxionnaz, for the organization of this session, Béatrice Sédillot, who very actively prepared this session and Claire Plateau, the commission's other rapporteur. These sessions are organized through their hard work.

#### **1.6. Opinion of the commission**

#### François GUILLAUMAT-TAILLIET

We propose the following opinion:

The challenges linked to climate change and the deterioration of the environment require the mobilization of all the players and the implementation of an ambitious public policy, as illustrated by the launch of the European Green Deal in 2019. To inform these issues and meet the need to monitor public policy, there are growing expectations regarding public statistics in the environmental domain and the regulations governing these statistics progressively encompass new requirements.

With respect to this, economic environmental accounts are an observation technique that provides a good framework. They adopt an integrated approach, based on several spatial data sources, designed to measure the value of the essential components of the environment and interactions between economics and the environment. For countries in the European Union, these accounts are annually produced by Member States, in compliance with 2011 European regulation and transmitted to Eurostat.

In March 2021, the Statistical Commission of the United Nations extended the economic accounting system to the environment by adopting SEEA Ecosystem Accounting (SEEA EA), including physical accounting of natural ecosystems ("EA" for ecosystem accounting) to supplement the standard of the economic environmental accounting system ("SEEA" for system of environmental-economic accounting) adopted in 2012. At the European level, a revision of the 2011 regulation on economic environmental accounts is currently ongoing with a view to making certain hitherto voluntary modules mandatory, in particular the module relating to ecosystem accounts.

The commission meeting provided the opportunity to take stock of the state of discussions on this subject and present different work currently conducted in Europe and France to quantify the contribution of ecosystems to the economy and to the life of individuals and societies. At the European level, the INCA (Integrated System for Natural Capital and Ecosystems Services Accounting) project was launched in 2015 as an extension of the 2014 UN publication of an experimental version of economic accounts (SEEAexperimental ecosystem accounting) in order to produce a "pilot" for an integrated system for economic and ecosystems services accounting for the European Union. The final report of phase II of this project was published in June 2021.

In France, work on the evaluation of ecosystems and ecosystem services has been conducted for many years as part of the Efese (évaluation française des écosystemes et des services écosystémiques) program with the involvement of various research organizations and institutes. These evaluations follow the same conceptual framework and aim to clarify the biodiversity and ecosystem condition and their related values (utilitarian, environmental, and ecological) to better integrate them in public and private decision-making.

After exchanges, the Commission considers that the development of an economic accounting system can help improve the monitoring and management of sustainability. It acknowledges the work conducted at the European level as part of the INCA project, but believes that the implementation of these accounts within Member States remains an ambitious challenge, given major methodological issues linked to measurement difficulties in these fields and the need to use various additional modelling techniques. As far as France is concerned, the Commission highlights the importance of the approach used by the Efese program. In particular, it supports the goal of building integrated economics and services evaluation capacity and encourages the development of collaborations between the work conducted under Efese and by public statistics with the aim of elaborating ecosystems accounts.

The Commission recommends continuing of methodological work on the valuation of the natural capital, by promoting a diversity of approaches. It asks to be regularly informed of the state of progress of this work.

#### Xavier TIMBEAU

To acknowledge the exchanges, I propose adding a sentence after the diversity of approaches to state that there is a strong need to inform public decision-making and a very tight schedule should be followed given the urgency of climate and biodiversity issues.

I would add the following phrase: "The Commission also recommends, given the climate urgency and shortterm impacts on biodiversity and ecosystems, to concentrate efforts to provide the information needed for public decision-making in the coming years".

#### Jean-Marc GERMAIN

It is essential to pursue all goals in terms of biodiversity, fight against global warming, etc. in order to know the cost of these different policies, namely climate expenditure where there is a gulf between the European standard and calculations made. If efforts need to be made on values, they should come from the research sector. However, it is important to track expenditure more exhaustively than it is currently done in these various policies.

# Béatrice SÉDILLOT

The issue of expenditure is different from the cost of repair. In practice, the approach is extremely complicated, as biodiversity is not unique. It seems to me that the calculation of the cost of repair is not so simple when one looks at the literature, given the many different areas and actions involved.

#### Vincent MARCUS

I completely agree. We perhaps understand this compact more than other advanced valuation methods. Yet it is not necessarily easy to put it into practice.

#### Xavier TIMBEAU

I think that she was talking about expenditure.

#### Jean-Marc GERMAIN

Expenditure is essential. If we set an objective, we need to know the cost of achieving it. At least the concept is clear. The costs of all public policies need to be calculated and added up.

#### Xavier TIMBEAU

I suggest adding something on reliable indicators on ecosystem condition after this sentence.

#### **Béatrice SÉDILLOT**

I would tend to add these sentences at the beginning and then talk about the follow-up.

#### Xavier TIMBEAU

We will indicate: "The Commission recommends strengthening indicators on ecosystem condition". The proposal on material accounts and accounts of impacts on ecosystems was interesting. We will therefore add "material flow accounts".

#### Jean-Louis PASQUIER

I cannot see the need to add material flow accounts. They already exist.

# Xavier TIMBEAU

They already exist but they are not itemized into sectors.

#### Jean-Louis PASQUIER

They can be, but they are not when they are provided as part of the regulation.

#### Xavier TIMBEAU

And "accounts of impact flows on ecosystems". Clément Surun mentioned ecosystem condition and the allocation of responsibilities of impacts on ecosystems.

#### **Clément SURUN**

Absolutely. The work by the Banque de France evaluated biodiversity footprint for each sector via an indicator.

#### Xavier TIMBEAU

We will therefore use the term "footprint accounts".

#### **Clément SURUN**

We could also mention the use of soils.

#### Jean-Louis PASQUIER

I feel quite divided. I am not sure that we can talk about footprint accounts. The footprint is the result of a calculation.

#### Xavier TIMBEAU

We could therefore use the expression "footprint calculations".

#### Jean-Louis PASQUIER

Yes.

# Xavier TIMBEAU

To include the suggestion by Jean-Marc Germain, we could also add "the monitoring of private or public expenditure of the environment also seems important".

#### Jean-Louis PASQUIER

I think that it is in line with Eurostat's choice to integrate ecosystem accounts rather than continue to extend expenditure covering climate.

#### Xavier TIMBEAU

We are going to replace "seems important" by "should not be neglected".

# Vincent MARCUS

Finally, expenditure accounts ignore an enormous part regarding climate, which seems paradoxical.

# Jean-Louis PASQUIER

This is the reason for which I want to return to the subject.

# Xavier TIMBEAU

We could say "should be a priority".

# Yann KERVINIO

We could state the "ecosystem condition", in line with the SEEA.

#### Xavier TIMBEAU

I think it is an English expression. The word "état" (state) sounds more French to me. We could however mention the English word in brackets.

#### Yann KERVINIO

I propose to mention the idea of structuring the framework to cover all relevant considerations for sustainable management of these ecosystems. I propose to add "in such a way as to ensure their ability to cover all relevant considerations for the sustainable management of ecosystems..." The statistical system should aim for exhaustiveness. Then, users will choose from this framework.

#### **Béatrice SÉDILLOT**

We can remove the word "ecosystems" after the footprint calculations.

#### Jean-Marc GERMAIN

Could we avoid removing the "but" in the previous paragraph?

#### Béatrice SÉDILLOT

The aim was to show a mix of data and hypotheses.

#### Luc MAUCHAMP

For decades, we have been trying to get people to understand that, above all, biodiversity is a wealth. It is therefore necessary to just as actively monitor expenditure as income produced by biodiversity. If we only monitor expenditure, we will conclude that biodiversity is very expensive. Both need to be balanced. It may be worth investing 100 million euros if we gain 16 billion euros. The same difficulty applies when calculating expenditure and income. I would therefore add "as well as income".

# Béatrice SÉDILLOT

We could indicate "considering the benefits".

#### Luc MAUCHAMP

That gives the impression that we know the value of these benefits, which is not the case. We therefore need to work in priority on both subjects.

#### Xavier TIMBEAU

We could indicate "the monitoring of benefits and expenditure".

# **II.** REQUEST TO ACCESS DATA WITHIN THE FRAMEWORK OF ARTICLE 7BIS

# Requests by the SDES to access data on MaPrimRénov consumption and crit'air car pollution sticker

# Françoise MAUREL

The SDES has submitted both requests. CONSEIL NATIONAL DE L'INFORMATION STATISTIQUE Minutes of the meeting of the Environment and Sustainable Development Commission, 21 October 2021 The first request concerns detailed data resulting from the Ma Prime Rénov database held by the Agence nationale de l'Habitat (French Housing Agency). The SDES, the statistical department of the Ministry for Ecological Transition, needs information on the new scheme set up since 2020 to support renovation in terms of the energy control policy. With this data, it would like to produce statistics to monitor and evaluate energy renovation policies within the framework of the Observatoire national de la rénovation énergétique. Individual data will be provided on a quarterly basis. It will be crossed with fiscal or other sources owned by the SDES to enrich information with the features of households applying to these schemes. This approach is part of the monitoring of energy housing renovation and aims to build indicators and produce studies that will be disseminated by the usual means of the SDES and ultimately to researchers.

The second request is to access data on the purchase or ordering of Crit'air stickers issued by the Imprimerie nationale. This data contains relatively little information: registration number of vehicles and information regarding the location of the owner or renter of the vehicle. This request aims to calculate the equipment rate in municipalities in terms of Crit'air stickers of the different categories to publish information as open data on data.gouv.fr and improve the vehicle fleet database.

# Béatrice SÉDILLOT

The request for Ma Prime Renov is complementary to the one previously filed for energy savings certificates. The second request helps complete data for closer monitoring of the vehicle fleet.

The Environment and Sustainable Development commission gives a favourable opinion regarding the two access requests filed by the SDES.

# CONCLUSION

# Xavier TIMBEAU

I would like to thank all the speakers, the rapporteurs and the participants. Once again, this meeting was very informative. The subject is very important. The question of providing useful and relevant data to steer transition should be at the heart of exchanges, as should be the allocation of financial means. The whole field is wide open. We need to be efficient and reach conclusions very rapidly.

The meeting was closed at 5:45 p.m.