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Adjusting National Accounts for Forestry: current interest and future relevance in the European Union

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Abstract

The Integrated Environmental Economic Accounts for Forests (IEEAF) is a voluntary set of economic accounts used in Europe to describe forests and their associated economic activities. Participation has remained poor for tables of the accounts that would detail forest assets and other environmental parameters. Despite economic data on forestry as an activity being available for most countries, the published data show persistent turnover of participants. Information regarding participation in the accounts are not available. Data on participation have therefore been collected and are presented here. The reasons for the historical level of participation remain unclear. Therefore the comments of member states from Eurostat meetings and correspondence have been collected and discussed. Given the voluntary nature of the accounts the views of national representatives from Austria were gathered during interviews at Statistik Austria and The Austrian Federal Ministry of Agriculture, Forestry, Environment and Water Management. The results show that while some national correspondents acknowledge the accounts capacity to collate reporting requirements, others have doubts on the accuracy and meaning of annual estimates of forest extent and biological assets.

Key Words

Forestry, Environmental Accounts, Participation, Integrated Environmental Economic Accounts for Forests, IEEAF

Deutsch Version

Das „Integrated Environmental Economic Accounts for Forests" (IEEAF) ist ein Regelwerk für die Bewertung öknomisch relevanter Forstaktivitäten in Europa. Die Einführung beruht auf freiwilliger Basis. Die Teilnahme der Staaten an diesem Regelwerk, welches zur Wertermittlung von Waldliegenschaften und der damit verbundenen Umweltleistungen dient, ist nach wie vor relativ spärlich. Obwohl Daten zur ökonomischen Bewertung von Forstwirtschaft in den meisten europäischen Ländern verfügbar wären, zeigen die publizierten Daten des IEEAF einen kontinuierlichen Wechsel an Teilnehmern. Detaillierte Informationen über die Teilnehmer an dem Regelwerk sind jedoch nicht verfügbar. Desshalb wurde in dieser Arbeit die relevante Information zusammengetragen und aufbereitet. Die Gründe für die Schwankungen bei den Teilnehmern bleiben unklar. Um diesen Wechsel an Teilnehmerländern zu erklären wurden die Kommentare und Korrespondenz der Eurostat Treffen gesammelt und diskutiert. Die unterschiedlichen Sichtweisen von Verantwortlichen in diesem Bereich bei Statistik Austria und dem Lebensministerium wurden durch Interviews gesammelt. Die Ergebnisse dieser Arbeit zeigten, dass die Teilnehmer das Potential dieses Regelwerkes für die Erfüllung verschiedener Berichtspflichten erkennen. Jedoch haben einige Zweifel an der Genauigkeit und Bedeutung von jährlichen Schätzungen von Waldliegenschaften und deren Umweltleisungen.

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Abbreviations

AWS – Available for Wood Supply
CN – the Combined Nomenclature, for classification of goods
CPA – Classification of Products by Activity
EA – Environmental Accounts
EAF – Economic Accounts for Forestry
ECE – United Nations, Economic Commission for Europe
EFTA - European Free Trade Association
ESA - European System of integrated Economic Accounts
EU – European Union
Eurostat – Statistical Office of the European Communities
FAO – Food and Agriculture Organisation of the United Nations
FRA – Forest Resource Assessment
GDP – Gross Domestic Product
GVA – Gross Value Added
IEEAF – Integrated Environmental Economic Accounts for Forests
ISIC – International Standard Industrial Classification
ISO 3166-1 alpha-2 codes are used instead of full state names
ITTO – the International Tropical Timber Organisation
JFSQ – the Joint Forest Sector Questionnaire
NACE – statistical classification of economic activities used in the European Union (*Nomenclature statistique des activités économiques dans la Communauté européenne*)
NAI – Net Annual Increment
NFI – National Forest Inventory
OWL – Other Wooded Land
SEEA – System of Environmental-Economic Accounting
SNA – the System of National Accounts
SoEF – the State of Europe's Forests
SRC/SRF – Short Rotation Coppice/Forestry
TEV – Total Economic Value

Introduction:

This thesis looks at forestry specific environmental economic accounts in the EU. The specific topics to address are the history of such accounts, their purpose, and the likely future development of the Integrated Environmental Economic Accounts for Forests (IEEAF). Due to the nature of forests and the associated economic activity there are several reasons why the collection of additional information describing forest-economy interactions has been proposed.

National accounts were originally devised to monitor the productivity and competitive success of human activities at the scale of national economies (Bos, 1993). Originally extraction and utilisation of natural resources was assumed to be limited by human ingenuity and labour alone. However this does not address limits in the possible utilisation of natural resources, nor does it address depletion of capital or reduction in future amenity. Natural resources are considered to be limited and there is recognition that future economic capacity will be based on the responsible use of these resources. In the absence of national scale economic planning, such issues are addressed by creating incentives to encourage sustainable economic activity. In planning a policy environment that encourages use of resources, national statistics are required which give details beyond the current economic output.

Forestry is a specific case where natural resources used in production are grown, managed and extracted as a result of human activity. While forestry related contributions to GDP are relatively small, the area of land used for growing timber in Europe is large and production cycles are long. This has 2 major effects. Firstly, due to the large areas, which are in some national cases classified as forest land, the importance of forestry is likely to exceed its small contribution to Gross Domestic Product (GDP). Positive and negative external effects of forestry are likely to be significant, depending on the associated activities and forest structure. Secondly, due to long production cycles the value of standing timber (forestry assets) is large, compared to yearly Gross Value Added (GVA). While traditionally national accounts dealt with GDP and measured the success of human industry, such activity requires inputs.

Environmental accounting for forests, adds information on the nature and extent of those inputs and estimates to what extent they are being utilised. Attention is brought to issues of over and under-utilisation of resources as an issue on which environmental accounts can provide information. Over-utilisation will lead to the reduction of future amenity, and under-utilisation represents a lost opportunity. This is well understood, European institutions and laws exist to all but ensure sustainable forest management. However, what is not clear is the economic effect of the level of utilisation on timber assets. Under-utilisation intuitively might look like "money in the bank", but if forest assets are not regularly valued, errors will result. One example is under-utilisation leading to over maturity; this might happen in the case of small forests on farms, where increment is only managed for fuel production. If such behaviour were to increase in frequency, then the current and future values of timber assets could be over-estimated if the valuation is based on the recent proportion of timber going to market and the prices attained from such use. Valuing timber assets is a useful way to understand changes in behaviour, so as to be able sensibly to address positive and negative externalities.

Understanding costs and benefits associated with environmental policy is one of the purposes of environmental accounting. In addition to dealing with the status of natural assets, it is also necessary to justify expenditure on the provision of services and goods that do not have financial values but do add value to the economy. To do this Environmental Accounting must develop reliable and trusted institutions.

When dealing with forests and forestry, important interactions between economic activity and the environment include the contributions of work in progress from goods with long production cycles. During such production cycles growing stock provides benefits (in addition to production) that are not included in traditional economic descriptions.

Environmental services have been attributed monetary values on numerous occasions, both at the global level (Costanza et al., 1997) and at local levels (Garrod and Willis, 1994). Such valuations might, however, be misleading. Whilst it is acknowledged that ecosystems

contribute value that is not captured by transactions, valuation studies that establish specific figures have been noted to transfer information which may lead to values of questionable utility Spash and Vatn (2006). Physical data may be transferred into economic functions or values in ways that are not consistent with economic theory; in this respect comparisons are of particular concern (Martinez-Alier et al., 1998).

Forestry is known to be peculiar as an industrial process in that the net-externalities are positive. This is mainly due to passive functions such as air and water filtration, as well as amenity conferred by property rights such as recreation. However, negative externalities also exist. When public goods are in short supply the economic incentives to increase supply may be lacking. In such cases economic activities that remove public amenity may become profitable.

There are also difficulties in estimating parameters such as extent of forests and volume of standing timber on an annual basis. These difficulties are often due to the necessary scale, and therefore costs involved in national forest inventories. Physical data are currently collected at 5 to 10 year intervals. As such, the most detailed compendiums of forest status do not cover the data requirements for annual accounts. Additionally, national inventories do not deal with valuation. For items such as the "value of forest land" valuations are more difficult than they appear since transactions are rare and often include bundled assets (standing timber). Environmental Accounts for forests and forestry require further estimations pertaining to both their annual resolution and detail of categorisation.

Estimating assets and functions not valued by transactions requires assumptions and as such there is a heightened risk of information being misused. The purpose of national accounting described by Bos (1992), is to provide information on the status of human activity in a nation. Following this, the purpose of national environmental forest accounts is that data might be collated to describe forests in economic terms on a repeatable and comparable basis, in order for national performance to be monitored. The difference is that there is less focus on competitiveness and international comparison. Following an established structure does not prohibit errors, but does allow criticism and improvement the established institutions. As previously noted (Sekot, 2007), however there is no common methodology for generating IEEAF values for forest land or standing timber at present and the choice of valuation method for these items remains with individual states (Eurostat E3, Sectoral and Regional Statistics - Environment and Forestry, 2012).

With respect to large scale valuation studies, Toman argues that, placing a value on ecosystems as a whole for the purpose of a cost benefit analysis of economic activity might not be meaningful, and that economic and non-economic information should be made available in a way that facilitates decision making (Toman, 1998). The IEEAF tables might address such issues, by collecting physical data and estimating values for a number of assets and activities separately (e.g. forestry, biological assets, productive forest land, and other wooded land).

Other factors include stock density, carbon balance, and the value of non-timber forest products. It has been noted that deficiencies still exist in the coverage of member states and the time series for the IEEAF (Sekot, 2007). This thesis aims to inform on the current state of the IEEAF, offer an explanation of historical participation, and to postulate the likely stages of development of accounts to follow.

Research Questions and Hypotheses

Given that there are currently many means of valuing ecosystem services: e.g. through market instruments, property rights, carbon taxes or subsidies, and that the justification for these depends on some value being attributed to non-market economic contribution of forests. What is the current state of participation in producing satellite accounts for forestry? Furthermore, how are these accounts perceived and used? In addition to answering these direct questions it is hoped that this thesis will enable the identification of common hurdles and discrepancies in the production of forestry accounts. By describing the current status of participation and use of satellite accounts, the purpose of this thesis should be to clearly describe the accounts currently in use, the extent to which they are used, and the likely developments in the near future.

Research Questions

1. What is the current level of participation in environmental accounts for forestry in Europe?
2. What are/have been the reasons for different levels of participation?
3. How are satellite accounts for non-market forest services used and viewed in European countries?
4. Are there different methodological approaches in providing data?
5. What are the likely developments in forest accounts?

Hypotheses

1. Participation can be described by data already published through the IEEAF.
2. Common themes exist where countries have failed to participate.
3. Due to the voluntary nature of the IEEAF the incentives of national correspondents to complete the accounts are important.
4. It is not always the case that data can be collected using consistent methods.
5. The proceedings of Eurostat's Forestry Statistics Meetings will indicate the likely future developments in the accounts.

Background

Environmental accounting (EA)

Environmental forestry accounts or environmental satellites to national accounts are a theoretical extension considering relationships, rather than simply placing single values on unvalued amenities. The common goal of national and environmental accounts is to structure what individual figures represent in order to avoid double counting (Bos, 1993; Vincent, 1999). What is required for policy makers to be effective when using economic data is that such data are reliable and provide a complete description of the problem (Toman, 1998).

When dealing with figures that address multiple components of a complex system it is important that they are structured in such a way that they do not overlap or cover the same issues, as per national accounts (Bos, 1993). The goal in EA for forestry is to provide a more accurate model of the total economic value of forests than is available from the rents of forest activities. Total Economic Value (TEV) is the theoretical sum of all benefits regardless of whether they are assigned values by markets (Plottu and Plottu, 2007). TEV is not comprehensively addressed by EA, as every valuable environmental factor is unlikely to be covered by national statistics every year, creating limits to which items can be reliably addressed. It might also not be sensible to include all components of TEV due to shortcomings in valuation even when physical data are available (Spash and Vatn, 2006). In the case of European EA, the respective system (the IEEAF) and the relationship of accounts to TEV is discussed later. In addressing TEV there is also risk of double counting. This is clear within the context of placing values on services that have a latent economic relationship. For example: recreation and biodiversity, where the value placed on recreation may be affected by the biodiversity of an area, which might in turn be given its own value.

The reasons why it is difficult for nations to gather EA data for forests include: data availability, differences in data collection methods, and differences in forest structure and use. In practice, nations have their own projects for addressing questions of non-market environmental values, in the case of the UK: the National Ecosystem Assessment, and in Sweden: The Value of Ecosystem Services ("National Ecosystem Assessment," n.d., "The value of Ecosystem services," n.d.). However, comparison of these efforts is not possible in many cases due to differences in intended use. The IEEAF project aims to provide general forest/economy information in a national account format that would be annually repeated.

Given that valuations of public goods are highly individual it makes sense to separate functions into individual studies so that the description is as close to reality as possible. Large aggregate studies have previously been criticised (Toman, 1998). However, while more detailed studies tackle functions on a finer scale they do not show the sum of all values, and are not intrinsically comparable. Environmental accounts deal with national statistics in a way that should avoid double counting. The issue is that such accounts must reconcile the definitions of the available data that the contributing nations have made available. Such data should also be available in a consistent time series. Valuation studies are generally carried out once rather than as a continuing assessment of the economic-environmental relationship over time. While Environmental Accounts fulfil this purpose, care must be taken that the assumptions made when using available data are clear.

One of the reasons that environmental forest accounts might be interesting is that while individual valuation studies can show that a forest has a certain value (assets, services, activities and goods) to certain groups of stake holders at a certain time, environmental accounts approach forests as a national asset that provides the opportunity for economic activity, additional non-paid for services (income), and a clearer picture of benefits provided on a yearly basis.

Total Economic Value (TEV)

The concept of TEV arises from the idea that traditional financial valuations of forest estates under-represent the value of these natural resources at the state level (Brun, 2002; Buttoud, 2000). TEV constitutes the sum of all products and services provided by an ecosystem and is a means of avoiding narrow indicators of forest value based on the objectives of one group of stake holders, such as those benefiting from timber production. Components may have *use* and *non-use* values.

The concept of TEV is a way of valuing all of the factors that are derived from a natural resource so that use and non-use values may be compared on the same basis (Plottu and Plottu, 2007).

The traditional purpose of national accounts is to show how sectors and the economy as a whole are performing. This data may then be compared throughout time series and with other countries (Bos, 1992). This is the traditional way of measuring the performance of an economy. However, when referring to economic activity it has become clear that some beneficial activities either do not produce a financial incentive to the entrepreneur or that the entrepreneur would accrue all of the costs but share the benefits with society as a whole.

The concept of TEV does not guarantee comparability across studies and it does not necessarily propose to provide information in time series. The purpose of establishing TEV is to include the values of uses that are paid for and otherwise not valued by markets. There are practices that some interests or groups of experts believe would provide further value – ecological stability for example – but would not have their total value factored into the managerial considerations of the forest owner or in the national accounts. Hence, there are goods and services provided by forests that are not recorded by economic activity. TEV is a concept that proposes to address this lack of information in a systemic way by identifying all the goods and services provided by a natural resource Plottu and Plottu, (2007) theorised a concept to categorise these items to help clearly describe TEV. Their paper describes this breakdown using a hierarchical chart reproduced here as Illustration 1.

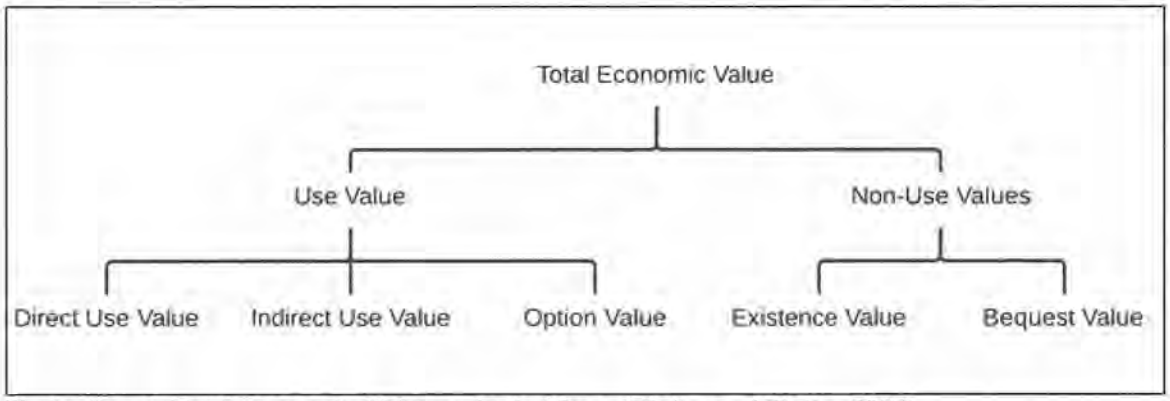

Illustration 1: Total Economic Value, adapted from (Plottu and Plottu, 2007).

In the example shown by Table 1 in reference to Illustration 1, biodiversity may have option values (that is, a current value based on potential future use of things like genetic resources or medicine) and indirect value such as ecological functions (stability). The purpose of TEV is to address these values and their relationships in a single description so that the summed valuation of the natural resource is free of systematic errors.

Direct use	Indirect use	Non-use
Timber Paper/pulp Veneers Fuel Non Timber Forest Products (agro-forestry, forage, game) Recreation	Carbon storage and sequestration Protective functions Biodiversity	Existence Bequest value

Table 1: Examples of TEV as per the categorisations in Illustration 1 (Plottu and Plottu, 2007)

There are a variety of methods that can be applied to generate monetary values for non-market goods and services, the choice of which is dependent on the data that characterise the good or service to be valued. For example, carbon stored in forests is not tradable as part of the European Union Emissions Trading Scheme, however, the shadow prices of tCO_2 may be used to indicate its worth. To illustrate the issue of methodological choice, *recreation* might be given a value:

1) Using data (on travel times and respective costs of travel and number of visits) to indicate the sum an average user is willing to pay to visit a forest (simple Travel Cost Method), or
2) Entrance fees and number of visits (a variant of the Travel Cost Method), or
3) Number of visits and willingness to pay (stated preference – Contingent Valuation Method),

As will be mentioned later with regard to the State of Europe's Forests (SoEF), even gathering data on the number of forest visits can be difficult. This means that consistency between values for either international or inter-temporal comparison would be challenging without both clear definitions of what is to be counted and methodological guidance on how this should be done. In practice, it is not possible to dictate how parameters are defined and how data is collected, since pre-existing data are nearly always used. However, norms should be established so that it is possible to take note of instances where differences occur and to permit future harmonisation.

Individually, organisations such as charities, national parks or research councils may commission studies to place values on one or many items, over varying areas. Examples range from forest types (Campos Palacín et al., 2001), to entire nations (Matero and Saastamoinen, 2007). In the UK the Forestry Commission, in 2003 commissioned a study to look into factors of TEV at the national level (Kenneth G. Willis et al., 2003). This shows that there is expertise and research resources to address questions related to TEV in Europe. Additionally, much work in this area is undertaken by the United Kingdom Office of National Statistics and the Department for Environment Food and Rural Affairs (Forestry Regulation Task Force, 2011; "National Ecosystem Assessment," n.d.)

How the IEEAF is related to the concept of TEV

Environmental accounts are a possible way of tracking asset balances as well as environment/economy interactions; consistently, at yearly intervals. The IEEAF is one such accounting system. With regards to TEV the IEEAF collects data as shown in Table 2.

This data is then presented in a standardised format. The details of the current IEEAF tables are provided as part of the results, starting with table 1a on page 42. The request to member states is for national experts to produce forest monitoring statistics in a standardised Excel sheet on items for which data is available. Where no data is available, interpolations or estimates may be used. This request is for national statistical organisations to produce

collected data or estimates on a voluntary basis. The voluntary nature of participation and the loose guidelines are likely to have had an effect of the availability IEEAF data and why certain data are not submitted by all countries every year.

What will be shown later in reference to Table 2, is that regular data is only available for table 3c of the IEEAF. While the scientific discussion has covered questions of addressing TEV, the nature of EA in Europe is such that even asset information regarding direct uses, such as the value of standing timber is not yet available.

Component of TEV	activities or services	Assets and changes	output	IEEAF, assets and changes		IEEAF, Activities (NACE rev.2)		IEEAF, goods (CPA)		IEEAF, services	
				PU	MU	PU	MU	PU	MU	PU	MU
Direct Use Value	-	Forest Area AWS	-	1a	1b	-	-	-	-	-	-
	-	Standing timber volume AWS	-	2a	2b	-	-	-	-	-	-
	Recreational services in forests	-	-	-	-	-	-	-	-	-	3a
	Agriculture in forests	-	Agricultural goods grown in forests, products of hunting, trapping	-	-	-	3a	-	3a	-	-
	Forestry	Logs removed recorded as intermediate consumption	Increment, timber derived products, planting of trees	-	-	3a, labour input of forestry	3a, 3c	4a, 4b, supply and use	3a, 3c; 5a, 5b, supply and use	-	3a, 3c
Indirect Use Value	Carbon storage and sequestration	Standing timber, biomass carbon, ecosystem carbon		1b, f1, f2	-	-	-	-	-	-	-
	Protection	Area of protective forest		-	-	-	-	-	-	-	-
Option Value		Standing Timber and forest area not AWS		1a	2a	-	-	-	-	-	-
		Protected forest area		-	-	-	-	-	-	-	-
Existence Value	Traditional woodland activities	Area of ecosystem by type	-	-	-	-	-	-	-	-	-

Table 2: Overview of the IEEAF 2006, revision 2 tables regarding their relation to TEV:

AWS, Available for Wood Supply; PU, Physical Units; MU, Monetary Units.

How the IEEAF is related to existing National Forest Inventory (NFI) data, and other international statistical projects.

Behaviour differs across nations regarding forest data collection. This is in response to the needs and structure of forests and forest industry - it follows that the data collected to describe the physical attributes of forests differs between nations in Europe. Nations do however conduct inventories measuring the physical properties of their forests. In the case of NFI's the data collected and the way in which it is collected has developed individually so that nations have their own methods of forest monitoring based on their history of issues and requirements. However, there is a passive process of harmonisation that is occurring due to the production of documents like the State of Europe's Forests (SoEF), a report from the UNECE and other partners (Forest Europe (Organization) and Liaison Unit Oslo, 2011).

A potential problem in the use of the SoEF in comparing NFI data is that on initial observation a reader might, by the layout of large tables listing many countries, be drawn in to thinking that figures are immediately and directly comparable, which is not always the case. To make comparisons, the user needs to investigate the way in which individual nations have produced and collected the various statistics provided in country reports. One notable example that illustrates this point is the number of forest visits reported in the SoEF which ranges from around 10^6 visits in 3 countries including Russia, to $1.5*10^9$ visits in Germany (Forest Europe (Organization) and Liaison Unit Oslo, 2011). It seems likely that the countries in question use different definitions for a forest visit, or there are variations in methods for collecting such data. It follows that not all information from different countries are immediately comparable with each other.

As mentioned the IEEAF aims to provide yearly accounts for forest assets. Most of the physical data requirements need to be fulfilled by NFI's. Currently, these are produced every 5 to 10 years, due to the work required and national requirements. The reporting frequency varies from nation to nation, and there is not necessarily a fixed frequency within nations. In order to get from the available data from NFI's, to annual data for the IEEAF interpolations must be made. Such work requires resources, and includes some risk of inaccuracies. As indicated, the IEEAF is not the only international reporting requirement dealing with sustainable management of European forests, it is however unique in its annual frequency, and the detail of assets, goods and activities, and service valuation.

Other international systems also use NFI data: UNECE, FAO and Forest Europe collect NFI data using the "Joint Questionnaire on pan-European quantitative indicators for Sustainable Forest Management". Which, along with the Forest Resource Assessment (FRA), is used by the UNECE and FAO in producing the State of Europe's Forests (2007 and 2011).The FAO are also separately responsible for the FRA which is carried out every 5 years. These two obligations were harmonised as of 2013, meaning that both questionnaires are still conducted: FRA (global) and the pan-European questionnaire, and the data collected should be consistent so as to reduce the reporting burden ("Forestry and Timber - UNECE," n.d.).

Trade statistics are collected in collaboration between the International Timber Trade Organisation, UNECE, FAO and Eurostat, with Eurostat responsible for data collection from EU member states and members of the European Free Trade Association (EFTA) ("Annual Review | The International Tropical Timber Organization (ITTO)," n.d.; Eurostat, 2014a). These reporting obligations have produced various sets definitions, some of which are applicable to the IEEAF (the IEEAF typically requests the latest FRA definitions to be used in describing physical parameters).

An extremely important feature of the IEEAF is that the submission of data is not a legal requirement and national ministries would be obliged to find resources for the work themselves. In addition to the voluntary nature of the whole IEEAF, not all of the tables and/or respective items are necessary. Therefore, it seems that a very important topic in the future of these accounts is how they are perceived by their potential voluntary participants. This has been investigated and time is allocated at the Eurostat Forest Statistics meetings to address

such queries. A summary of the comments organised by nation is not available meaning that the overall situation and reasons for the current level of participation are not immediately clear.

History of National Accounts and the IEEAF

The idea of calculating national performance in a comparable way was first undertaken by industrialising countries in Europe as early as the 17th century (Bos, 1992). This method treats natural resource use as income, and does not account for depletion of natural resources or so called "limits to growth" (Meadows et al., 2004). As well as trying to reduce emissions and environmental damage, the idea of sustainability includes restricting the use of resources voluntarily so as not to reduce the amenity available to future generations. Instruments that promote this sort of behaviour must survive market forces so that members of the public are convinced that the well-being of future generations is worth limiting the use of finite resources today. To do this information is required such as extent to which forests may be utilised sustainably, and if forestry is less valuable to the economy than other land uses, does this affect the availability of public goods and services.

Standardised national accounts were first proposed by the UN in 1947 to measure national income in a comparable way. However, by the late 1960's national income was criticised as being inadequate for measuring welfare (Mishan, 1993). This idea persisted and was to later form part of the "limits to growth discourse". Nordhaus and Tobin adjusted national accounts to account for the loss of amenity due to urbanisation and unpaid household income (Nordhaus and Tobin, 1972), while Schumacher wrote about the importance of rural development in providing welfare (Schumacher, 1973).

The present situation in supplementing information given by measuring GDP, is an approach that maintains the independence and consistency of national income reporting in the United Nations' (UN) System of National Accounts (SNA). Instruments are devised to provide additional information on the economy where data is lacking without violating the usefulness of the existing SNA. In the European Union, the European System of Integrated Economic Accounts (ESA) is the standard used when producing national accounts (it conforms to the UN SNA). It is typical in developed countries for the forestry sector GVA to represent a very small part of GDP, this is the case even for nations where forestry constitutes a major land use. For Austria, a developed European country with forest cover of 47.6% in 2008 (Lebensministerium, 2008) the forestry sector Gross Value Added (GVA) is €1.17 billion (2012) which amount to 0.38% of GDP (€307.00 billion in 2012) (Lebensministerium, 2014; Statistik Austria, 2014). In this case, forests constitute a major land cover type, while forestry accounts for a minor portion of GDP.

Forestry specific national accounts in Europe started with the Economic Accounts for Forestry (EAF) in 1969 and dealt with specific details of the forest sector. In the 1995 revision of the ESA the differentiation of logging and forestry activities was made (Sekot, 2012). This means that removed timber is treated as intermediate consumption with regards to forestry activity, and as an input of logging. This is an important differentiation as it implies that natural resources produced by economic activity may be treated as income, due to the existing institution of sustainable forest management in Europe. Standing timber on forest land is work in progress, the value of which is increased by increment and decreased by removals. The value of removals then contributes as an input of "logging" as an activity. With the addition of asset accounting this differentiation is an important precursor for Environmental Accounting.

The EAF treated forestry and logging as separate activities since the 1995 revision and has been used to provide additional information to the ESA since 1969 (Science for Environment Policy, 2007). This is because the ESA complies with SNA standards which remain a consistent measure of national income (Szabó, 2008). The IEEAF has provided additional information since 1999 and formally replaced the EAF from 2007 for the reporting periods 2005 and 2006. This had the following effects:

1. EAF data was no longer requested by Eurostat and the information was requested in the form of table 3c
2. The IEEAF included the distinction between forestry and logging (Wolf-Crowther, 2014)

The current version of the IEEAF aims to provide asset and flow accounts for forests on a yearly basis and reports on pilot applications were published in 1999 and 2000 (European Commission and Eurostat, 2000, 1999). However, at this time production was only recorded via harvests so that the difference between increment and harvest was only apparent when using the bridge tables between the EAF and ESA (Sekot, 2014 – personal communication). The opportunity to provide such asset information annually exists in the current IEEAF tables. While the core focus of the EAF was to provide industry specific production and income data one of the aims of the IEEAF is to provide data on major forestry specific services, and the associated assets.

The EAF and subsequent IEEAF data was and is provided on a voluntary basis. As will be noted, concerns include what the accounts will aim to show, and how their limitations will be understood. For example, gathering data on the value of logged timber used internally by households is difficult. Household consumption also requires estimation in accounting for flows, where the value of all of forest activities might not contribute to the GVA of forestry unless estimated.

Furthermore, in years of unusually high felling - due to events such as windthrow - the EAF tends to represent the increased felling in such years as increased GVA while the ESA national accounts represent the loss of stocks and may exhibit a reduced GVA (Sekot, 2007). This was observed for the year 2003 in Austria due to a windthrow in Salzburg. The regional GVA calculated was 13.6% and 9.1% of the national GVA for the EAF and ESA respectively. This should be compared to the years 1995 – 2004 where the GVA contributions of Salzburg were 8.0 (calculated by EAF) and 7.5 (calculated by ESA). Abnormally high fellings affect the output and entrepreneurial income recorded in such years would depend on how the GVA is calculated (Sekot, 2007).

The IEEAF relates to the European level European System of integrated Accounts (ESA), similarly the SNA has an associated programme of environmental satellite accounts which would also cover forestry and are currently under development (the System of Environmental/Economic Accounting, SEEA), however, given the hierarchical nature of the ESA and SNA, and the fact that the SEEA are still under development, they will not be discussed here as an additional requirement. Similarly the IEEAF uses two sets of classifications for goods and activities used in the ESA and also derived from the SNA. They are the European level classification of activities: *Nomenclature générale des Activités économiques dans les Communautés Européennes* (NACE), and products: Classification of Products by Activity (CPA).

The Joint Forest Sector Questionnaire (JFSQ) and *Nomenclature générale des Activités économiques dans les Communautés Européennes* (NACE) revision 2 2008

The JFSQ covers statistics on the manufacture of wood and wood products but most of the data that would quantify information on competitive markets is confidential, and therefore not available on the relevant Eurostat database, "PRODCOM". This work is completed in coordination with the relevant UN organisations (FAO, ECE, and ITTO) who are responsible for collecting data from various groups of states. To reduce redundant work requests for data are issued by the responsible authority, with Eurostat responsible for the EU and EFTA. Nations are asked to collect data using the set of NACE revision 2 (NACE Rev. 2) definitions from 2008 (Eurostat, 2008a) which are then transmitted by the nations, to Eurostat using the JFSQ. NACE revision 2 is the statistical classification system for economic activities used in the European Communities. It is part of the International System of Integrated Classification (ISIC) set out by the United Nations and its purpose is to allow comparability between statistics (Eurostat, 2008a). NACE Rev. 2 deals with defining statistical descriptions for economic

activities (production and trade) and there are other statistical definition systems that deal with products (Classification of Products by Activity, CPA 2008) and goods (Combined Nomenclature, CN) (Eurostat, 2008b). The JFSQ is an example of collaboration in producing regular comparable statistics from a number of different nations while clearly delegating the data collection responsibilities between international organisations in order to avoid double work. The functioning of the JFSQ in Europe is based on the use of NACE rev. 2 definitions. The NACE Rev. 2 manual states with respect to the first revision:

"In 1970, the "Nomenclature générale des activités économiques dans les Communautés Européennes" (NACE - General Industrial Classification of Economic Activities within the European Communities) was developed. As its name implies, it was a classification covering the whole range of economic activity. This first version of NACE suffered from two major drawbacks:

1) *As it had not been established as part of the Community legislation, data were often collected according to the existing national classifications and then transformed into the NACE format by means of conversion keys, which did not produce satisfactorily comparable data;*
2) *As NACE Rev. 1970 had not been developed within a recognised international framework, it offered poor comparability with other international classifications of economic activities."* - (Eurostat, 2008a - p16.27)

With the authors stating earlier in the document *(Eurostat, 2008a - p.14.4)*:

"Such an integrated system allows the comparability of statistics produced in different statistical domains. As a consequence, for instance, statistics on the production of goods (reported in the EU according to Prodcom surveys) could be compared with statistics on trade (in the EU produced according to CN)."

It describes the importance of a clearly stated method and associated definitions in producing usable statistics. Further to this, the NACE guidelines describe the statistics, where they are presented and how they may be used. Early versions of NACE (in the 1970's) encountered problems from not tying in to an international framework. Subsequent versions were created by adapting the United Nations ISIC where more detail was required. NACE rev. 2 was adopted in 2006 and is relevant for statistics from the 1 January 2008 onwards. The use of NACE has been declared mandatory by member states of the EU, who may produce their own (more detailed versions) for national use, but must follow the overall framework of the international set of definitions: NACE and therefore the hierarchically superior UN version, ISIC. This success in collaboration regarding JFSQ appears to be based on some key properties: that there is a clear set of definitions and methodology for collecting data, a format for presentation of the data, and clear delimitation of responsibilities by international organisations. This final point sets out which data should be collected by whom, to avoid any redundant burden on member states by requesting the same information more than once.

It is therefore not necessary that the JFSQ itself be mandatory since the statistics upon which it is based exist in an agreed standardised format. The method for collecting those statistics is also organised so that different international organisations do not submit duplicate requests ("Proceedings of the workshop and training on forest product statistics," n.d.).

Definitions Used for the IEEAF

The definitions to be used for data submission to the IEEAF are NACE rev. 2 for economic activities, the CPA for products and the Temperate and Boreal Forest Resource Assessment definitions suggested (FAO, 1997) for physical data. The FAO definitions are updated regularly with the most recent iteration released in 2010 used in the 2011 SoEF report (Forest Europe (Organization) and Liaison Unit Oslo, 2011). The CPA and NACE are classifications of products and activities at the European level that conform to the respective UN classifications used in the System of National Accounts (Eurostat, 2008a, p.13.3). However, it is apparent that not all physical data submitted conform exactly to these definitions, in addition to the definitions

reported to be used by individual countries for Land Use, Land-Use Change and Forestry (LULUCF) reporting (European Council and European Parliament, 2013).

The European Union does not have a common definition of forest and as shown in annex V of Decision 529 and the lack of a common forest policy (European Council and European Parliament, 2013), forest definitions differ between European countries and differ to the FAO standard. This means, as previously mentioned, that definitions used for reporting forest land use data may differ from those stipulated by FAO. Eurostat does not object to different definitions being used in the IEEAF, as long as individual nations are consistent over time (Eurostat E3, Sectoral and Regional Statistics - Environment and Forestry, 2012).

Current Status of the IEEAF

Results of Pilot Applications 1999

As a result of a pilot study in 1999 and subsequent test applications in 2000 (European Commission and Eurostat, 2000, 1999) Eurostat has continued to develop the IEEAF tables through the annual Forestry Statistics Working Group. Much of the technical development of the IEEAF occurred in producing these early publications and their associated task forces. Subsequently the Forestry Statistics working groups have been used to discuss participation and proposed changes to the original tables that were piloted by 4 countries (Finland, Germany, France and Sweden) and tested by the pilot nations with the addition of Austria. The purpose of the pilot study conducted in 1999 was to assess which data were available and discuss methodological considerations such as the best valuation method to use when producing yearly asset accounts for forests (European Commission and Eurostat, 1999). Eurostat's 1999 pilot explored a number of methods for valuing standing timber and forest land separately. This was mainly due to the separation being stipulated in the European System of Accounts 1995 (ESA 95) as this would better enable economists to describe land and its associated natural resources, or in this case, biological assets. One of the main reasons for separating land and biological assets is the different way their quantities change, while the quantity of land rarely changes due to economic activity, the associated biological resources are subject to (for example) cultivation, harvesting and natural disasters (European Commission and Eurostat, 2000, 1999). This separation however, proved problematic. In the case of France, available data (sales of forested land) did not intrinsically separate timber and land values. Furthermore, when using sales of forested land as a proxy for deducing the values of land and timber, the transactions of land in a given accounting period are not likely to be representative of the national forest structure. It is plausible, for example, that forest sales reflect certain forest features as a cause of sales.

It was assumed by Eurostat in the pilot that forest land seldom changes ownership, and that when it does the sale price is unlikely to differentiate standing timber and land values. The stumpage value method is one way to estimate a value for standing timber, and therefore estimate the value of land by deduction. This requires stumpage prices to indicate the value of mature standing timber. Then, one must assume: the time to maturity for various species and age classes, and the final mature volume. The final harvest value (minus management costs) must then be discounted to reflect that the timber will be available in the future (the interest rate of this discounting must also be chosen). Interestingly, while Sweden did not have information that would allow them to differentiate growing stock by species, Germany found, (using in hedonic pricing model, instead of the stumpage value method) that species had no effect on final values except in the case of Spruce (*Piciea spp.*). Hedonic pricing is most commonly used by real estate agents and assumes that certain parameters (number of rooms, room size, etc.) will have strong enough predictive effects that (house) values can be estimated. Along with the "stumpage price" method Germany used a hedonic pricing function to derive land and standing timber values: based on the properties of the national forest (species age class, etc.). The other nations established land values either by assuming a ratio

for the value of forest land (7%, Sweden) or some version of the stumpage value method (European Commission and Eurostat, 1999).

The pilot study paper concludes by stating that the separation of forest land and standing timber, based either on actual transactions or net present value (NPV), has proven complicated. This is because there are few transactions of forest land and these transactions do not typically

1) represent the structure of national forests and
2) deal exclusively with forest land (standing timber is typically part of the bundle of goods to be sold).

Further complications arise when discounting due to:

1) results being sensitive to the chosen discount rate due to the long rotation periods typical in forestry and
2) the method of discounting suffering from deficiencies in available information (time to maturity, volume at maturity, and value per m^3 at maturity) which require assumptions.

The results showed large differences in the value of forest land between DE, FI, FR, and SE. Due to different methods used, the authors were unable to discern which part of the differences were due to the methodology and which to the structure of national forests. Similarly, in the case of the value of standing timber in Sweden (reporting period, 1993; 16 ECU/m^3) and France (reporting period, 1995; 34.1 ECU/m^3) price volatility and the different reporting years were cited as possible reasons, along with the high proportion of broadleaves in French forests (European Commission and Eurostat, 1999). Germany also recorded a higher value (1995; 26.5 ECU/m^3) for standing timber than Sweden (1993; 16.2 ECU/m^3) and used a different methodology, it is not clear to what extent this difference is due to national structure, reporting period, or methodology. At the time of the pilot being published (1999), work was ongoing to investigate the effects of different methodologies on land and standing timber values.

One of the clear statements of the 1999 pilot study is the importance of differentiating between forestry and logging. This differentiation of activities is useful in describing the value of forest assets. As described, the management costs (required when discounting the value of standing timber not yet mature) and logging and transport costs (required when establishing standing timber values), are used when describing the value of forest assets.

Valuation of European Forests 2000

The second round of investigations, titled "Valuation of EU Forests – results of the IEEAF test applications", was published in 2000, one year after the "Results of Pilot Applications" (European Commission and Eurostat, 2000). The second round of investigations into how integrated environmental economic accounts might function was undertaken by Eurostat with work filling out the IEEAF tables by Finland, France, Germany and Sweden. The test applications also included agreements from Austria, France and Germany to undertake specific investigations into different valuation methods. Finally, an additional contribution by Finland dealt with the value of protected forest areas which were in the Finnish and Swedish cases treated as having no value in the 1999 pilot study (European Commission and Eurostat, 2000, 1999). Within the IEEAF, as of 2000, national organisations remained free to determine their own methodology for valuation based on what will best represent these nations' forests. However, such methods must comply with ESA accounting rules: that forestry and logging are treated as separate activities, that increment is the output of forestry, and that standing timber and forest land are valued separately. Eurostat took the position that the stumpage value method offered the best possibility for international comparison. Although it was still not clear to what extent a common methodology would be applied and how far international comparisons would be possible with no common methodology.

As of 2007 a methodological approach has not been suggested and large differences may occur depending on the method selected, it has been proposed that such uncertainties compound a lack of incentives for nations to participate in the IEEAF (Sekot, 2007). From 2000 onwards the aim has been to collect data that would consistently link forest assets and flow accounts, economic activity in forests and the supply and use of wood, in both physical and monetary terms (European Commission and Eurostat, 2000). It was not stipulated whether this statement referred to temporal and/or international consistency, so it has been assumed that both were equally desirable until the more detailed statement (that Eurostat's main concern was that nations be consistent over time) was made at the 2012 Forestry Statistics Working Group (Eurostat E3, Sectoral and Regional Statistics - Environment and Forestry, 2012). The 1999 pilot study indicated that asset values might, in part, differ because of the method chosen. This is in addition to the effect that subtle differences in definitions that Eurostat recently proposed to address by allowing the possibility to provide additional detail in future IEEAF revisions (Eurostat E3, Sectoral and Regional Statistics - Environment and Forestry, 2014a). In 2000, in order to discern the effects of various methodologies from those of "age distribution, timber use, species composition, and climate" Eurostat commissioned Austria, France and Germany to undertake investigations on this topic (European Commission and Eurostat, 2000). The study concluded that separate asset valuation of land and standing timber was possible and that this might be undertaken using a variety of ESA compliant methods. Of the different methods tested, the conclusion states that these should be appraised and selected based on national forest structure and data availability. This is because the choice of method might generate different results based on national circumstances. In the case of Austria, it was observed that the consumption value method and the stumpage value methods produced similar results because during the reporting period forest structure and harvested timber were similar. This particular set of circumstances might not always be true and due to the assumed impact of climate change on tree and plant species distributions, any assumption that a current situation will prevail might prove premature (Thuiller et al., 2011, 2008). Additionally, in the current period it was shown that stumpage and consumption method values may differ. In Germany, the value of standing timber calculated using the consumption value method was found to be much lower than that calculated by their hedonic pricing model and the stumpage value method. The reason for this is thought to be due (in a reversal of the Austrian case) to harvested assortments being different form the assortment structure of standing timber (European Commission and Eurostat, 2000). The study did not investigate the amount of work that would be required nor how much work would be conserved when completing the accounts on a yearly basis. Furthermore it did not propose a single method of valuation to be used. A preference was declared for the stumpage value method, and the age constant method was proposed as a second place candidate. The work required to collect the extra data for producing IEEAF table has been regarded as "all but straightforward" (Sekot, 2007). It seems that the lack of a suggested methodology leads to uncertainties in the work requirements and the veracity of the output of such work. Additionally, given the array of possible methods it seems impossible for Eurostat to move the discussion on to how countries might fill the tables out with reduced marginal effort in future reporting years.

Status as from the reporting year 2005

Eurostat decided to implement the IEEAF in full in 2006 and replace the EAF with table 3c as well as requesting that member states fill out 12 other tables covering various properties measured in physical and/or monetary units. As will be noted in the figures contained in the results, participation in the IEEAF greatly increased for the reporting year 2005. Both in the published statistics for EU and European Free Trade Association (EFTA) member states. There are two possible reasons for this: the first phase of the 5th enlargement of the EU occurred in May 2004 and, the IEEAF was formally adopted in place of the EAF with countries being asked to submit data using the IEEAF tables from the reporting year 2005. To investigate the effect of the enlargement on participation by using published data, one can look at which of the participants for the reporting year 2005 could be due to new membership. From 2004 to 2005 IEEAF participation increased from 7 to 20 member states, this increase cannot be fully

attributed to the 12 new member states of the 5th enlargement (2004, 2007). Of the 12 new nation member states Estonia, Malta and Latvia did not produce economic data for 2005. Of the new EU members 7 were new participants from the 5thexpansion for the 2005 reporting period, and 1 was returning (Slovenia had data published since the 2002 reporting year, year of submission not shown) (Eurostat E3, Sectoral and Regional Statistics - Environment and Forestry, 2014b). There were 8 states from the 5th enlargement that had economic data as part of IEEAF published, and these account for 7 out of 13 new data points for the reporting year 2005.

The current questionnaire sent out to correspondents is the 2006 revision 2. This includes 13 tables which are described as part of the results along with the respective levels of participation. Participation has remained fairly constant after the increase in 2005. For table 3c data availability for reporting periods between 2005 and 2010 has been between 20 participants in 2005 and 16 in 2010, participation data has been collected and is described in the results.

Materials and Methods

Nations and times

The nations included in this study concerns the 28 members of the European Union, the four Members of the EFTA when talking about data published by Eurostat. In cases of submissions and attendance at meetings, candidate countries (currently five) are also included. Practically, one of five current candidate countries are included (Turkey), that responded to a query in the 2011 minutes of the Forestry Statistics Working Group, and were represented at that meeting. The participation data for table 3c come from the Eurostat website, and is used for the period of reporting years 2003 to 2010 and was gathered on 14/01/2014. Information on table receipts other than 3c was received on the 3/6/13 and is reproduced in Annex 2, and covers data for the reporting years 1999 to 2011. Regarding documents in the literature review and the 2012 consultation, email replies and minutes were collected from the CIRCABC website in January 13, the documentation of the 2014 working group was also considered to finalise the results in March 2014.

Review of the IEEAF

The first task to be completed was to read through the IEEAF tables and manual and summarise the requirements, which would later be used to write part of the introduction to this thesis, and provide part of the basis for further enquiry.

As described, the Eurostat working groups have been the main forum for discussion on the IEEAF. The proceedings of these meetings along with presentations held, and consultation correspondence are available in the European Commission's CIRCABC database. Gaining access to proceedings of meetings was an important, if simple, early step. The records held by the Forestry Statistics Working Group are public. This was not known at the time and an initial request for a list of possible correspondents and access to the current proceedings was sent to Eurostat (Email 1)

Eurostat were able to provide information on accessing the public CIRCABC database. Also available, are the 2012 consultation comments from member states, on the proposed changes to the IEEAF tables following the 2011 meeting. Eurostat also granted access to the 2012 forestry statistics meeting where it was possible to meet correspondents and gather further information for the purposes of the thesis.

In preparation for the forestry statistics working group the previous Working Group's minutes were reviewed, and notes taken on the responses to the 2012 consultation regarding changes to tables 1 and 2 made in 2011. This preparation provided information on what to expect, and which countries would likely have informative comments on their current level of participation. A potential weakness in this approach is that questions will be more likely put to countries that have actively participated in the conversation and therefore maintained some kind of positive disposition to the Environmental accounting process. However, for the purposes of gathering information on possible success it makes sense to approach nations that are critically engaged in the IEEAF process. This meant that some countries with limited previous participation might not be covered. Upon reading the comments from the Eurostat 2012 consultation it is apparent that all countries have articulated reservations as well as encountering difficulties in collecting the necessary data.

The purpose of attending the meeting was to meet and set up the possibility of communication with national experts. For certain countries in attendance it was not possible to receive comment on the level of participation as the correspondent present did not have expertise in the area of national environmental accounts, in these cases agreements to forward information requests were sought. However, if there has been little previous involvement within the nation in the IEEAF then specific comments on feasibility would not be possible. Awareness of the

situation of not being able to cover every country is important in coming to conclusions following the collection of information.

The final task before the meeting was to improve the accessibility of information about the project. For this purpose it was desirable to allow potential contributors to search for further details freely, and evaluate the project to decide if they would be willing to participate. The method for communicating and recording communications throughout the project which is an important part of evaluating what has been collected was also set out. The communication structure consists of:

1. The project website
2. A hand out for the forest statistics meeting describing the project
3. A contact form for recording contact details of participants at the meeting and a spreadsheet for digital storage
4. A standardised email form for recording correspondence
5. A template to be used to record the gathered information by nation in a journal format: National Profiles.
6. Progress reports to send to my supervisor to keep him up to date and enable him to offer advice
7. A list of all communications

The information on participation included in the introduction was requested from Eurostat in the case of "tables other than 3c" and derived using 3c data from the Eurostat website.

Website and Project Preparation

The website was produced to provide extra information on the project and to log progress. To fulfil these aims, the site consists of a number of pages, the first of which is a welcome page introducing the project. Other pages include a more detailed project summary, materials and methods, and associated documents. Initially, the planning page served as a precursor to these materials and methods.

A major concern was that potential correspondents who might otherwise offer help being put off by rudimentary, poorly researched or redundant enquiries. It was impossible to be fully informed when writing enquiries. However, to put out general questions without being able to display understanding of the topic at hand, would have been unhelpful. Not all enquiries would be applicable in every case. Different countries have different responsible organisations, for example, statistical organisations regarding accounts and environment ministries for forest inventories. In addition to forestry offices and statistical offices there is also the scientific interest to deal with.

There were therefore three separate lines of enquiry: those to environmental/forestry organisations, those to statistical organisations, and those to the published scientific literature.

Consideration of these lines of enquiry resulted in a flowchart describing the project and illustrated task dependencies. This enabled the completion of a critical path analysis showing potential problems when executing the project. The main use of the critical flow analysis is to work out which tasks can be undertaken while waiting for replies from national correspondents. The Gantt chart is presented on the website alongside an outline of problems that might arise and how these might be tackled. One of the most important parts of this exercise was the assumed hours of work that could be completed in a week, since if these hours were not possible then, it would become more likely that "processing information" would become more limiting than "collecting information".

The Materials and Methods page provided examples of the administration documents for organising that information. This was to allow potential contributors to see how their correspondence would be handled.

The observations section contains details of the main results from national enquiries, while not exhaustive, one of the hopes for having an accessible results section was that it would improve project organisation.

As indicated it was also necessary to produce some administration and information documents in order to aid communication and organise the collection of results.

Project Handout

In order to communicate the goals of the project to participants at the Eurostat Forestry Statistics Working Group a handout was produced and circulated (Annex 7). The document included:

1) An explanation of the use of personal data and the length of retention
2) The research question
3) Contact details of the researcher
4) Method of approach and what is to be requested
5) The aim of the project
6) Details of further information and
7) A bar-code link to the website's summary video.

Contact Details Collection Form and Contact Spreadsheet

Further to communicating the aims and purpose of the project it was also necessary to collect information from those members of the Working Group that were willing to provide information. For this purpose a record sheet was used with the Name, Nation, Organisation, Organisation Type, Organisation Level and email address of the correspondent. This data was collected and stored on a spread sheet. The number of possible contacts being quite small (<50) and the life of the data being short (end of the project), mean that rather than creating a contact database, a spreadsheet was sufficient to store the contacts which are sortable by name, nation or organisation type.

Email Documentation Template

In order accurately to record the progression of national enquiries it was important to have a standardised method of recording correspondence. To this end, email correspondence was downloaded and recorded in a standardised form for inclusion in the final thesis (Email 1 - 10). The standardised form includes space for the text body as well as information on any links or attachments. The investigation of this further information was then written up in the relevant national profile.

National Profiles

Since correspondents often would either attach documents or links/email addresses for further information, the use of these resources is recorded in national diaries that will then be used for the results section of the thesis. Upon completion of the investigation leading to this master thesis national profiles were created for 13 countries including information from the following documents:

1) Notes on the 2012 consultation on IEEAF held by Eurostat
2) Email correspondence (8 countries)
3) Search results from the 2010, 2011 and 2012 minutes of the Forestry Statistics Working Group

4) Details of the years in which tables other than 3c were transmitted to Eurostat.

Description of Data Sources and Collection Methods

Case studies were built from both gathered and publicly available information on the IEEAF to answer the question "What is the political and scientific interest in the IEEAF". This was accomplished by sorting available information into national profiles and then using those profiles to assess the various tables. The case studies (referred to as National Profiles) are built using a variety of source materials. In relation to scientific interest, this thesis has broadened the search to include scientific literature at the national level dealing with environmental forest accounts. An example search is "environmental forest accounts +Finland" which returned a paper dealing with an accounting framework for Finnish forests (Matero and Saastamoinen, 2007). For contextual purposes this thesis also looks at the scope and frequency of information submitted to other international projects to collect statistics, such as the UN organised Forest Resource Assessment (FRA). However, the most important task is to review and reorganise the material available from the Eurostat Forestry Statistics Meetings and to gather further information from those nations. Thus, the data sources for creating the national profiles comprise of:

1) The minutes for Eurostat Forestry Statistics meetings (CIRCABC website, publicly available)
2) The Eurostat website
3) Correspondence from Eurostat concerning the amendments made following the 2011 meeting (CIRCA-BC website, publicly available)
4) Correspondence with national experts either from the Forestry Statistics meeting of by referral following that meeting (personal communication)
5) National policy documents referred to following personal communication (publicly available)
6) Interviews with national experts (personal communication, Austria only)
7) Information from Eurostat concerning current participation (personal communication)
8) Scientific studies dealing with environmental forest accounts in the concerned country

Eugene Bardach mentions the importance of avoiding emphasising people or documents at the expense of the other (Eugene Bardach, 2011 – p69):

"*...experts themselves have typically obtained a good deal of their experience by studying documents, and that much of what administrators can offer can also be found in* [documents]".

This emphasises the importance of both preparation (in order to increase the likelihood of a meaningful interview) and the importance of using both types of resource to draw conclusions. As well as the interviews and questionnaires which provide more detailed cases it is necessary to frame these detailed cases by reviewing the information available from Eurostat. In this method profiles are created in varying degrees of detail, depending on the available information. The focus is on collecting unpublished information where possible (4 of the cases) which is then verified by comparison to the other, less detailed profiles. In this study representing all viewpoints is not an objective, since obtaining detail from less engaged member states can be futile. This is because the respective experts are not attached officially to a topic where there is little national engagement making official comments difficult to obtain.

The case studies should show the main reasons explaining the level of participation throughout the account's history. National profiles were originally based on the number of responses (10) to the 2012 consultation on the IEEAF by Eurostat. In Practice 13 profiles were created based on information being available on participation and Working Group minutes.

The sample of nations used to create detailed profiles is not necessarily representative, but while the number of detailed cases is small (4/30) these may be compared with information gathered for other National Profiles. This makes it less likely that any major or pertinent issue

affecting participation is entirely missed. Thus, in the evaluation it is necessary to address which problems have been identified and explained in detail and which remain unclear. In addition to the national profiles, it is also necessary to include the work of Eurostat consisting of the 2011 consultation, Minutes of Working Group meetings and the recently created task force on the IEEAF.

IEEAF – Minutes and Questionnaire responses (Information from the CIRCA-BC website) Building national profiles.

In order to analyse the information held within the minutes of meetings of the Forestry Statistics Working Group, clauses from the minutes were organised nationally and then by subject. To do this, the minutes were studied and notes added to the relevant national profiles, where the discussion at the Forestry Statistics meetings concerned IEEAF. Once this information had been collected, the position of various nations on topics throughout the meetings became apparent. Information is marked with the relevant date and origin of content. The content of the 2012 consultation from Eurostat was added to the general information on the national position towards the IEEAF and by adding the table-specific comments to the table categories in the national profiles. In practice the information from the 2011 consultation, email correspondence and interviews was added to the national profiles chronologically and then sorted by topic later. Interviews were also conducted in Austria at two state organisations: The Lebensministerium (LM) and Statistik Austria (STAT).

Emails

Emails were sent to correspondents following the meeting of the Forestry Statistics Working Group. The initial contact always detailed the nature and scope of the requested information. From this, correspondents may either state what they are able to answer themselves or to refer to a relevant national expert who might be able to offer insights in specific areas. All emails are documented in the thesis calendar (Table 3) and those that were successful (resulted in further information) are referred to within the annex entitled "email". Emails are numbered 1 to 10 and listed chronologically in Table 3 with details of who was contacted, the subject, and the nature of the reply: 0 – no reply, 2 – referral to another person or organisation, and 3 – individual response with further information.

Email Calendar

Date	Correspondent	Nation	Organisation	Subject	Response	#
06/11/12	Marilise Wolf-Crowther, Rajmund Laczko	EU	Eurostat, EU Statistical Office	2012 working group	3	1
29/11/12	Ewa	PL	Wood Technology Institute	Organisations to contact in Poland	2	2
08/12/12	Elina Maki-Simola	FI	METLA, Finnish Forest Research Institute	General Enquiry	2	3
09/12/12	Matthias Dieter	DE	Thurnen Institute, Federal Research institute	General Enquiry	0	
09/12/12	Astrie Guilhemine	FR	Ministry of Agriculture, Food and Forestry	General Enquiry	0	
09/12/12	Trond Almund Steinset	NO	Statistics Norway	General Enquiry	0	
09/12/12	Miroslav Kovalcik	SK	Forest Research Centre (Národné Lesnicke Centrum)	General Enquiry	3	4
09/12/12	Jan Oldenburger	NL	Private Consultant	General Enquiry	0	
10/12/12	Sheila Ward	UK	Forestry Commission, National Forestry organisation	General Enquiry	3	5
10/12/12	Surendra Josip	SE	Statistics Sweden	General Enquiry	2	6
10/12/12	Eoin O'Driscoll	IE	Private Consultant	General Enquiry	0	
10/12/12	Maria Torres Quevedo	ES	Ministry of Agriculture (Ministry of Agricultura)	General Enquiry	0	
16/12/12	To whom it may concern	PL	Forest Research Institute (IBL)	General Enquiry	0	
16/12/12	To whom it may concern	PL	Warsaw University of Life Sciences - Faculty of Forestry	General Enquiry	0	
16/12/12	To whom it may concern	PL	Agricultural University in Krakow - Faculty of Forestry	General Enquiry	0	
16/12/12	To whom it may concern	PL	Poznan University of Life Sciences, Faculty of Forestry	General Enquiry	0	
17/12/12	Geremia Gios	IT	University of Trento	Enquiry regarding Goio et.al. 2008	0	

17/12/12 Illaria Goio	IT	"Italy Foundation for Scientific Research Projects"	Enquiry regarding Goio et.al. 2009	3	7
22/01/13 Jukka Mukkonen	FI	Statistics Finland	Referral by METLA	3	8
25/02/13 Marilise Wolf-Crowther	EU	Eurostat	Enquiry about national participation	3	9
14/04/13 Johannes Hangler	AT	Lebens Ministerium, Environment Ministry	Preparatory Interview Questions	3	11
11/06/13 Matthias Schermaier	AT	Statistik Austria, Statistical Office	Preparatory Interview Questions	3	12

Table 3: Email Calendar

Chronology of emails sent over the course of the Thesis Project. Conversations are marked 1 -3: 1 = no reply received, 2 = reply received, questions not answered but referral given, 3 = reply received including information. In addition, those emails marked 2 and 3 are included in the annex under the title "emails" (p86), as such they are given an email number here for reference.

Interviews

It was possible to conduct 2 interviews covering the Austrian case from an environmental ministry and a statistical organisation's points of view. The main reasons for this is that interviewing is costly, often involves travel, and gaining access is difficult. In addition, due to the amount of material available in the CIRCA BC database on the proceedings of the IEEAF, preparing for such interviews is a time demanding task. This project also collected feedback from interviewees prior to submission, since interpretation of information from interviews is necessarily subjective and can be easily influenced by one's preconceptions and viewpoint (Box-Steffensmeier et al., 2010).

The Oxford Handbook of Political Methodology advocates recording interviews, but of a disadvantage to recording also states *(Box-Steffensmeier et al., 2010)*:

"Although recording on the record is thought to make respondents more circumspect this presumption is based on the assumption that the interviewee will not be forthcoming".

The following line of reasoning has been adopted: the purpose of the interview is to find out organisational stances and the interviewee has agreed to be interviewed on the specific subject. Therefore, the interviewees were included by being informed of the questions beforehand and being invited to give further information. The interview preparation for the LM and STAT interviews is available in full in Email 10 and Annex 4, respectively.

Lebensministerium (LM)

The interviewee was sent the proposed questions in advance, in order that they understand what would be asked and would either be prepared with answers or be prepared to state that they did not have expertise in an area. This would hopefully result in more detailed answers to questions where expertise did exist.

The email preparing an interview with LM is based on the information available in the 2012 summer response to the Eurostat consultation on IEEAF. After an introduction the email contained a summary list of what was known about the Austrian position on IEEAF. Verifying the initial content of the Austrian national profile (Email 10).

The interview was recorded and the audio was then transferred to a PC and played back for transcription. The transcription was made with the aid of transcription software Express Scribe. The raw text was then formatted to show who had said what and spelling mistakes were then checked against the original recording. Grammar: full stops, commas, and ellipsis are entered during the transcription process and represent pauses in the original speech.

The transcript was then interpreted in separate notes which were colour coded. Formatting meant that derivative thoughts and direct inferences could be marked differently to denote the following:

1) Further questions
2) Assumptions
3) Notes based on quoted text

Following these notes the interview material was used to explain the current level of participation in the Austrian case. Finally unanswered and new questions were used when formulating questions for the subsequent interview at Statistik Austria.

Statistik Austria (STAT)

The interview at STAT included questions carried over from the Lebensministerium that were not relevant for that interview. The preparation sent to STAT before the interview included the questions to be asked. Unfortunately it was not possible to send the interview summary from the LM interview as after writing up the transcript and taking the notes there was no time to

verify these with Johannes Hangler before the STAT interview. The interview at STAT was arranged to be with Matthias Schermaier. However, upon arrival it transpired that the interview would include 3 additional members of the organisation. The members of the interview at STAT were unwilling to have the interview audio recorded. In this case, the interviewer made written notes as well as receiving a written response sent by email from STAT following the interview.

Information available from the Eurostat website (Table 3c)

European forestry data is provided by Eurostat, on its website. The data provided include trade and production on Round Wood Removals, by assortment and, type of ownership. It also includes various breakdowns on the trade of wood products (Eurostat E3, Sectoral and Regional Statistics - Environment and Forestry, 2014b). The IEEAF data published to date are also included as well as the EAF data published prior to 2005. Additionally, non IEEAF, asset data on forest extent (ha) and wood volume (m^3) are provided at 5 year intervals and environmental data are provided on the extent of defoliation, forest fires (instances and extent) as well as areas of forest designated as providing a protective function – broken down by states (Eurostat, 2014b).

The data published pertaining to the IEEAF tables are derived from table 3c. Table 3c has been the most commonly received table and includes the economic information previously provided through the EAF. The published data covers Forestry Goods Output, Net Annual Increment, Saw and Veneer Logs, Fuel Wood, and Pulpwood. Data are provided in Euros or European Currency Unit (ECU, prior to 1999 or national adoption), and in national currency. Illustration 3 shows the maximum number of nations for which data are available per year across the 5 categories mentioned. Extracted from the website on 14/01/2014, this indicates the greatest success achieved in publishing data on a yearly basis. These are data that were collected since 1995 as part of the EAF (with the exception of the value of Net Annual Increment) and since 2000 incorporated in table 3c of the IEEAF, which replaced the EAF in 2006 (European Commission and Eurostat, 2000; Eurostat E3, Sectoral and Regional Statistics - Environment and Forestry, 2006; Science for Environment Policy, 2007). The IEEAF data available (21/03/14) cover the years 2003 through to 2011 with some results (3) available for 2012 (Eurostat, 2014b). Here, the data from 2003 – 2011 are used.

Published data were used to generate the graphs on the data gathered by Eurostat using table 3c. The data were downloaded from the Eurostat online database (Eurostat E3, Sectoral and Regional Statistics - Environment and Forestry, 2014b). With the data available on spreadsheets there were three figures to generate for each year: 1) The number of nations for which values were published, 2) the number of "new participants" 3) the number of nations that would drop out "drop-outs". 1 was achieved by simply counting the number of logical values, and 2 and 3 were achieved by conditional counting. Using array formulas it is possible to count the number of cells in a column or row based on whether criteria are fulfilled in the corresponding cell in a different column or row. The formulae below (Illustration 2) show the command "count the *number* entries in [column: A] that have a corresponding *number* entry in [column: B]" which was used to calculate the returning nations.

Returning	"=SUMPRODUCT(ISNUMBER(A11:A34)*ISNUMBER(B11:B34))"
Total	"=COUNT(B11:B34)"
New (counted)	"=SUMPRODUCT(ISNUMBER(B$11:B$34)*ISTEXT(A$11:A$34))"
New (derived)	"=B40-B39"
Drop-outs	"=SUMPRODUCT(ISNUMBER(B11:B34)*ISTEXT(C11:C34))"
Verified?	"=IF(B$41+B$39=B$40; "Yes")"

Illustration 2: Formulas used to count the number of IEEAF values (€) published on the Eurostat website.

Formulas were applied on individual sheets for the items from table 3c: Forestry Goods Output, Net Annual Increment of Standing Timber, Veneer Logs, Fuel Wood and Pulpwood. This subsection of the sheet starts with "Returning" which is in row 39.

What was received by email (tables other than 3c)

Due to enquiries put to the Slovakian national correspondent Miroslav Kovacik it was apparent that some nations completed tables other than 3c. Having received the completed IEEAF tables from Slovakia for 2011, information on participation was requested from Eurostat (Email 9). Eurostat sent information available so far detailing receipts of "tables other than 3c" (Annex 2). This information was not initially usable due to the file format used. The information was therefore transferred to Open-Office Calc so the number of receipts by Nation and Year could be counted and shown. The small number of results meant that verifying the accuracy of any spreadsheet would take just as long as manually counting the number of participants. In this case the manually counted values were used. The counting spreadsheet will be verified and uploaded to the project website upon submission of this thesis.

Results

Current IEEAF data availability (3c)

The information currently provided constitutes what would have been part of the EAF and is covered by the current IEEAF requirements, however not all of the data that are proposed to be collected as part of the IEEAF 3c are published on the ES website. Missing information for which data is theoretically collected include:

1) Intermediate consumption
2) Gross value added
3) Net value added
4) Factor income

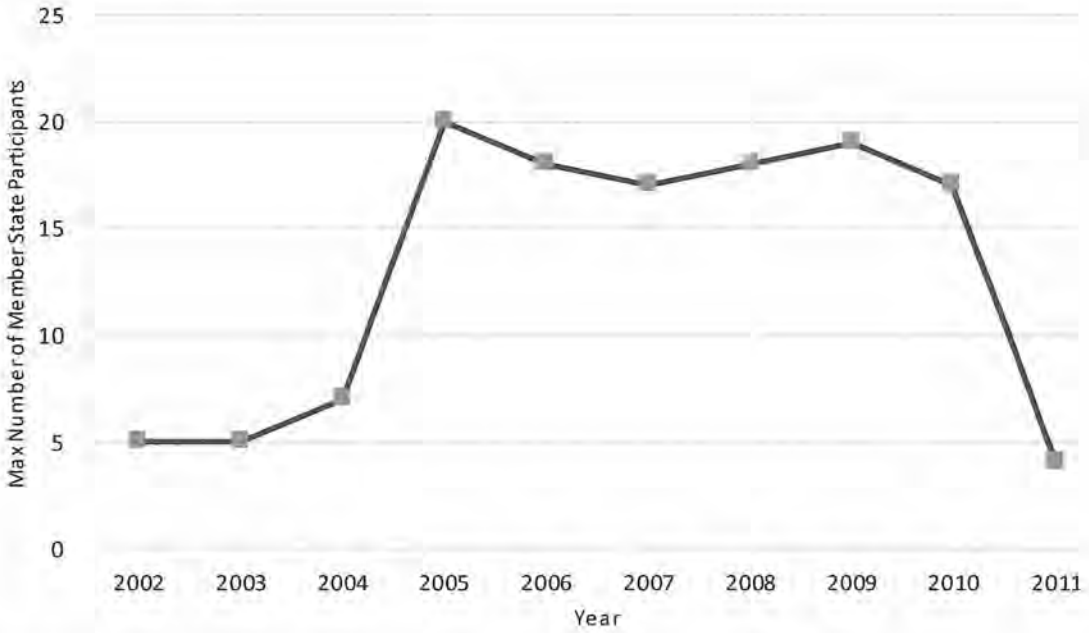

Illustration 3: Number of entries across all IEEAF 3c categories per year.

Data is available across 5 categories which are submitted as part of table 3c. Data were retrieved as € values for: Forestry Goods Output, Net Annual Increment of Standing Timber, Veneer Logs, Fuel Wood and Pulpwood. The chart shows the maximum number of participating countries every year from 2002 - 2011.

The 2010 Forestry Statistics Working Group minutes (Available from the CIRCA BC database) state that in 2010 19 countries had submitted data for table 3c for the reporting year 2008 while the maximum number of states for which data are available on the Eurostat website is 20 for 2005 (Eurostat E3, Sectoral and Regional Statistics - Environment and Forestry, 2010; Eurostat, 2014b). While Illustration 3 shows the maximum number of nations for whom 3c information is available from the Eurostat website, Illustrations 4 and 5 show the turnover of participants: how many countries with data available had an entry for the previous year, how many nations from the previous year dropped out, and the number of newcomers. Notably the year 2011 shows 4 entries in Illustration 3 but given that Eurostat established in the 2010 Forestry Statistics Working Group Minutes that they had received 2008-data from 19 countries it is plausible that this low number of entries is due to a (c.a. 2 year) lag in publishing at the date of retrieval: 14/01/2014 (Eurostat E3, Sectoral and Regional Statistics - Environment and Forestry, 2010). Eurostat requested the data for the reference year 2011 by the 28 of June

2013 (Eurostat E3, Sectoral and Regional Statistics - Environment and Forestry, 2012). What this dataset indicates (shown in Illustration 3) is that the data set prior to 2011 is incomplete, but it also shows participation in providing data form, 3c, by a majority of member states. To assess the regularity of participation one would have to look at the turnover of countries contributing to this figure. Illustrations 4 and 5 both show "newcomers" (nations providing data that did not appear in the previous year) "returning" (nations providing data in the respective reporting year and the previous year) and "drop-outs" (nations who provided data in the previous year but not in the reporting year). While there is a good base of participation in reporting economic figures through table 3c there is persistent turnover of participants, with at least one country dropping out in every year between 2006 and 2010 regarding Goods Output (Illustration 4).

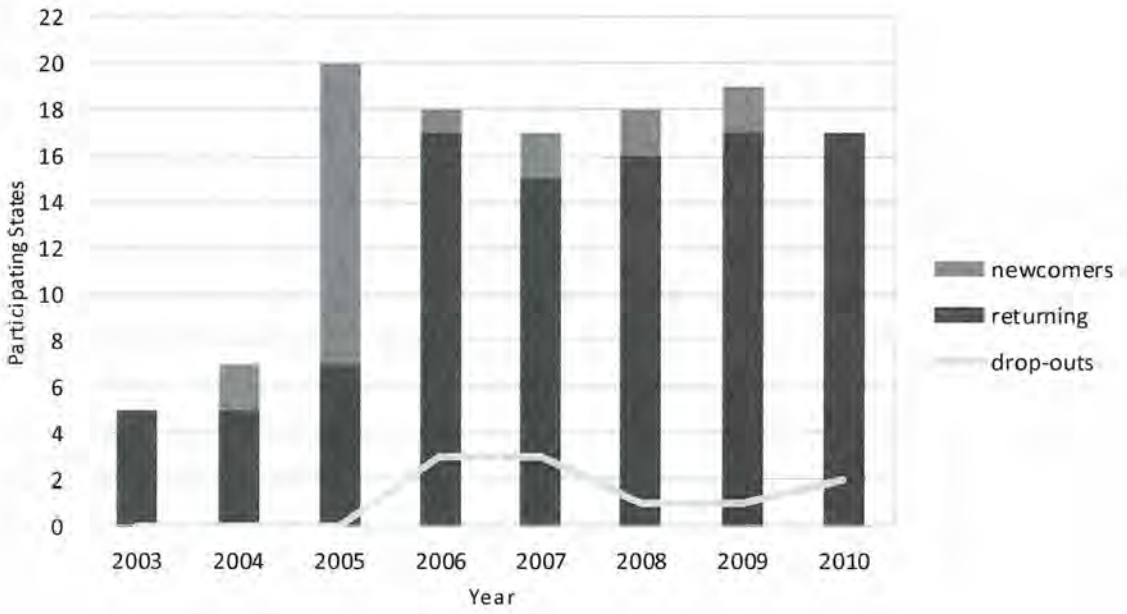

Illustration 4: Turnover of participants for whom information on Goods Output of the Forest Sector (3c) is available on the Eurostat website.

What can be seen for both the number of nations providing Goods Output and the Value of Net Annual Increment is that the number of participants leaving are often balanced by new participants. This is not the case for 2010, where nations dropped out compared to 2009 and there were no newcomers for Goods Output and Value of Net Annual Increment (Illustration 4 and 5). As of 25/03/14 for 2011 (not shown in figures, after the data collection period of this thesis) there are 17 results for the Goods Output of the Forestry Sector, with 1 drop-out (Romania) and 1 newcomer with a nationally estimated value (Portugal) (Eurostat, 2014b). What is also not shown in the participant turnover graphs is the cumulative number of unique drop-outs: as of 2010, for Gross Output seven member states have at some point provided data for Goods Output, but failed to do so in 2011. Therefore the total number of member states that have at some point before 2011 participated in the IEEAF by providing Goods Output is 24 of a 32 possible contributors as of 2013 (EU28 +4 EFTA). The precedent for European Free Trade Association States is set by NO and CH who provided data from 2006 and 2002 respectively. Candidate states are not considered as while participation in the process occurs (recently, TR was represented at the 2011 working group) data appear to become available upon accession minus two years: SI data is available from 2002 (2004 accession), BG 2005 (2007), or later ("EUROPA - Countries," n.d.; Eurostat E3, Sectoral and Regional Statistics - Environment and Forestry, 2014b). It should also be mentioned that of the 24 nations that have at some point submitted data: a value of 0 is entered for Malta (2009); Lithuania is also only represented for 2005.

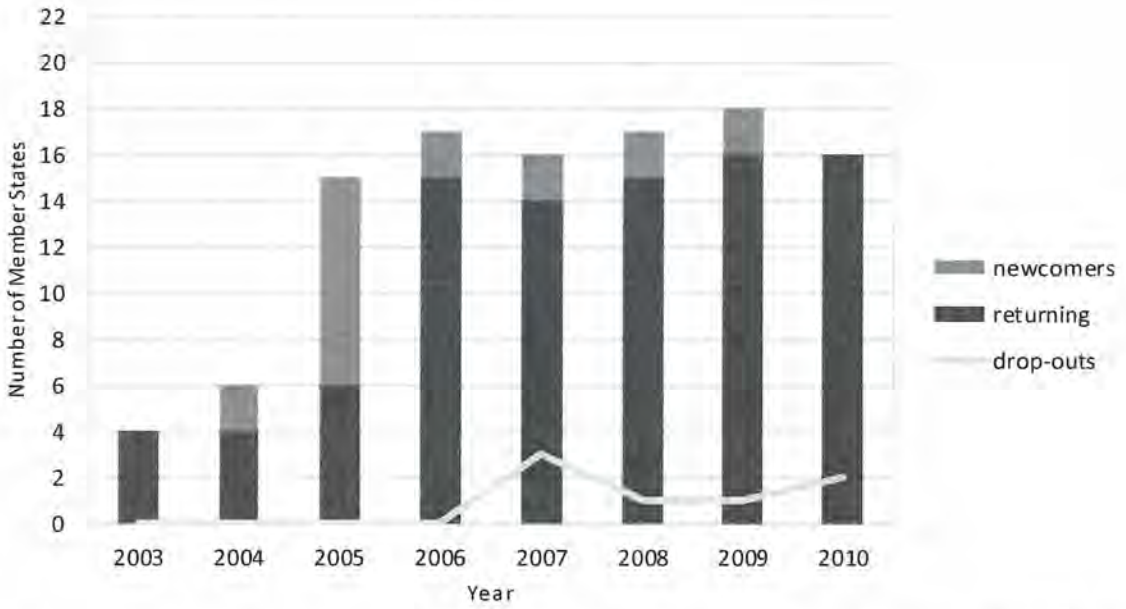

Illustration 5: Turnover of participants for whom information on Value of Net Annual Increment (3c) is available on the Eurostat website.

Illustration 5 shows the information for the turnover of member states for which the Value of Net Annual Increment (vNAI) is available. As with Illustration 4, what is not shown is the number of nations for whom data is available for at least one year. In the case of vNAI, the total number of nations that have had these data published by Eurostat is 23. As of 14/01/2014 16 nations had data available through Eurostat for the reporting year 2010. This was unchanged as of 25/03/14, however 2011 vNAI data now represents 15 nations as Romania dropped out (Eurostat, 2014b). The working group documentation from 2010 dealing with the IEEAF provides information on the results of questions put out by Eurostat, included are the results to an enquiry whether nations calculate the value of Net Annual increment. Assuming that the lists are consistent this leaves one country that stated that they value net annual increment but did not submit this value to Eurostat. In fact this assumption is not correct, and the actual situation is a little more complex (Table 4).

Response to Query	**Net Annual Increment Valued?**
Yes	17
No	5
"-"	2
Total	24
NAI Availability for 2010	16

Table 4: Is Net Annual Increment Valued?

A Survey of IEEAF Correspondents Representing 24 Countries Published in the 2010 Minutes "The IEEAF Table 3c in 2010 – Status report" (Annex 1)

Of the 24 countries reviewed in the 2010 table 3c minutes 23 appear in the IEEAF data published by Eurostat (Luxembourg is omitted), and of the 24 countries that appear on in the IEEAF data 23 appear in the "2010 table 3c minutes" (Malta is omitted) (Eurostat E3, Sectoral and Regional Statistics - Environment and Forestry, 2010; Eurostat, 2014b). The enquiry in 2010 into how many countries value Net Annual Increment (NAI) resulted in 17 countries

saying they do (Table 4), of these possibilities, information is not available in the data provided on the Eurostat website for 3 countries (Hungary, the Netherlands and Poland). This means of the 14 countries (of 17) that stated that they value NAI are represented in the NAI data retrieved from the Eurostat website. This leaves 2 countries (Bulgaria and Switzerland) that stated that they do not value NAI in the enquiry presented in the 2010 working group minutes, but for whom data is available from Eurostat (Eurostat E3, Sectoral and Regional Statistics - Environment and Forestry, 2010; Eurostat, 2014b). Annex 1 shows the list of countries from both instances and whether they have NAI data available on the Eurostat website and whether they stated in 2010 that they valued NAI. Both Bulgaria and Switzerland have data published prior to 2010 when Eurostat made the enquiry regarding estimates of NAI.

Forest area and wood volume also feature as articles on the ES website, these are examples of the type of data that would provide environmental information on economic forest activity. The physical data are presented at 5 yearly intervals as part of the FRA cycle, rather than the yearly data that would be available if the IEEAF tables were fully completed. The data provided on assets under the category of "Sustainable Forest Management" in the Eurostat Database (Eurostat, 2014c):

"are not collected by Eurostat, but by the FAO, UNECE, Forest Europe, the European Commission's departments for Environment and the Joint Research Centre. They include forest area, wood volume, defoliation on sample plots, fires and areas with protective functions."

In addition to what is available from table 3c online, the IEEAF contains further tables as previously mentioned. The descriptions below detail the tables included in "IEEAF_New Tables_2006 rev2_[year of enquiry]" which are sent out every year for member states to fill in. The current tables (at the time of writing) include the following (Illustration 6, page 40) taken form the accounts overview provided by Eurostat (CIRCA BC) and titled "IEEAF_New Tables_2006 rev2_31MAY2011". It is important to note that the Working group in 2013 was moved to January 2014, with a task force taking place in November 2013 and that new proposals for tables 1a and 2a are likely to be made following the Working group in January 2014. These proposals will be visited in the results and conclusions, but for this description the most recent set of tables has been used (IEEAF revision 2, 2006).

Information on tables other than 3c has been provided by at least Slovakia, who stated by email that the complete tables are provided on a yearly bases although with some delay (Miroslav Kovalčík, 2012). Further communication with Eurostat regarding what else had been collected resulted in the unpublished document "Overview_who provides what_06MAR2013" (Annex 2) being made available. The document received by email details the tables received by Eurostat other than 3c.

The economic data provided as per table 3c have been provided numerous times in recent years (2005-2011). For tables other than 3c, fifteen nations appear to have submitted at least one additional table between 1999 and 2011. There are also two examples of countries that were able to complete every IEEAF table for more than one consecutive year (France, Slovakia). The accounts therefore while possible to complete, suffer from low levels of total participation regarding tables other than 3c and persistent low level of turnover of participants regarding 3c. This implies that while providing data is theoretically possible, low participation and turnover are a result of the voluntary nature of the accounts making the incentives, or lack thereof to complete them important in describing participation. Given the similar institutional set up in EU states and the existence of a common code of practice for statistical organisations (European Commission and Eurostat, 2011) it has been assumed that there are common reasons for non-comprehensive completion. Furthermore, it is proposed to investigate if reasons for the current level of participation might be common across nations.

In order to continue looking at the IEEAF and tables other than 3c the summary of tables (provided in the IEEAF overview) is shown in Illustration 6 and their content and the submissions received by Eurostat are described in the next section.

Table	Variables
Table 1a Forest balance: area of wooded land	Closing area, afforestation, deforestation.
Table 2a Forest balance: volume of standing timber	Closing stocks, gross increment, total removals.
Table 2b Forest balance: value of standing timber	Closing stocks, gross increment, total removals.
Table 3c Economic accounts for forestry and logging	Main variables (output, gross value added etc.) for the forestry and logging industry.
Table 4a Supply-Use physical table: use	Exports and total use by product.
Table 4b Supply-Use physical table: supply	Output, imports and total supply by product.
Table 5a Supply-Use monetary table: use	Exports and total use by product. Main variables (output, gross value added etc.) by industry.
Table 5b Supply-Use monetary table: supply	Output, imports and total supply by product.
Table F1 Carbon balance for woody biomass	Closing stocks, gross increment, total removals.

Illustration 6: Short descriptions of IEEAF tables taken from IEEAF 2008 revision 2.

Submissions of tables, other than 3c 1999-2011 and table contents

By far the most frequently submitted table is 1a, dealing with the extent of forest land Illustration 7. Table 1b was less popular indicating difficulties in generating data for the value of forest land. What is clear from the receipts of tables other than 3c is the generally low level of participation, which has previously been stipulated (Sekot, 2007). In dealing with tables "other than 3c" this thesis now looks at what was received by Eurostat, rather than what is published.

What remains unclear is the reason for increased participation in 2005 which was the first reporting year the EAF was dropped but also coincides with the 5th expansion occurring in 2004 and 2007. This is because some countries appear to participate in transmitting IEEAF tables before EU accession which does not confirm the pattern observed in published data from 3c (Estonia – first reporting year 1999, accession 2004; Hungary – first reporting year 2000, accession 2004; Cyprus – first reporting year 2000, accession 2004). Bulgaria (first reporting year, 2005; accession; 2007) and Latvia ('03; '04, respectively) appear to report on accession. Finally SK, PL and HU, participated later, relative to the accession process. Therefore it is not possible to say from this analysis what effect EU expansion had on the submission of tables other than 3c, while the behaviour of new members appears to be mixed, the low number of participants mean that even the incentives of individual nations may have had a large relative effect on the number of participants. What can be said is that while the EU was expanding during the period covered in Illustration 7 the optional forest accounting institution lost some of the additional complexity added in the years of IEEAF introduction from 1999 to 2005, by no longer requesting EAF and IEEAF tables. The notable increase in submissions for the reporting period 2005 in 6 tables (1a, 2a, 4b, 5a, 5b, f1 and f2 - Illustration 7) was not maintained in the period 2006 – 2010. What is clear in the case of Latvia, is that a pilot study was funded for the 2003 reporting period where tables (all except f1, f2) where filled out and received by Eurostat (Central Statistical Bureau of Latvia, 2007, Annex 2) This was the only year for which Latvia submitted tables other than 3c, indicating that while the expertise and ability exists the required incentives to undertake the work on a yearly basis do not. The number of nations represented in Illustration 7 is 14, further indicating the turnover of

participants. Of the 14 nations which have submitted tables, 4 did so on only 1 occasion LV, CY, DK, DK and FI. The years after 2005 do show higher levels of participation (Illustration 7) which indicates that strengthening the IEEAF institution by adopting it formally instead of the EAF, improved willingness to participate. This idea is supported in that in both groups ('published data from EU and EFTA states for 3c' and 'receipts for tables other than 3c including candidate countries') participation increased once the IEEAF was formally adopted to an extent that is not fully explained by expansion. The data received concerning tables other than 3c included the status as of February 2013 therefore, given the expected 2 year lag in submissions data for 2011 were not included. However, 3 submissions from DE, FR and SK were recorded for 7, 1 and 13 tables respectively.

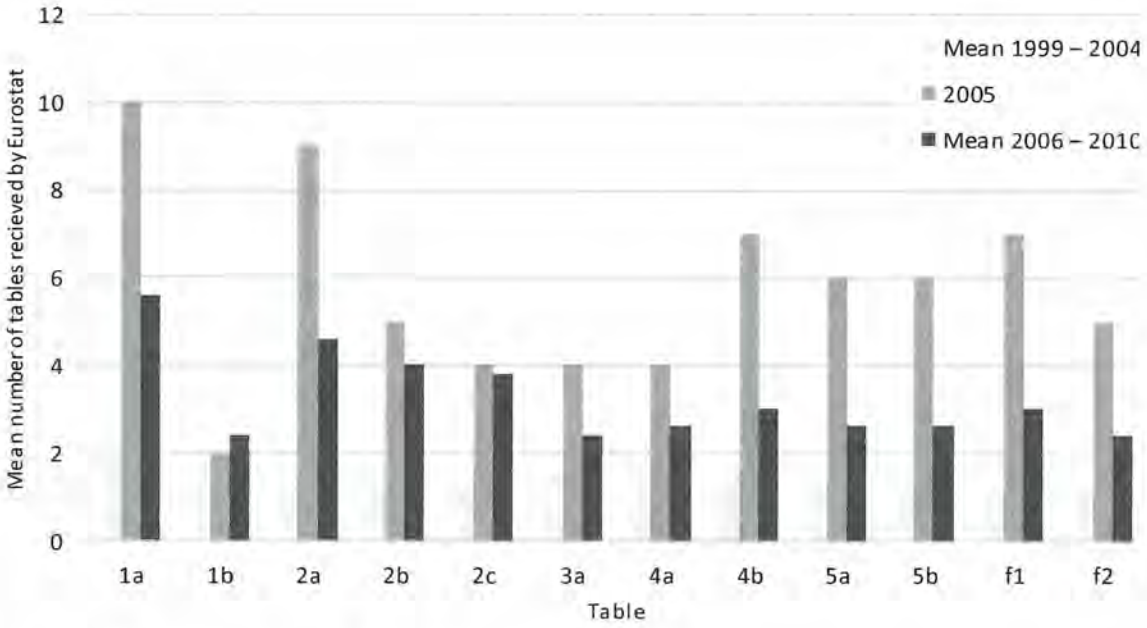

Illustration 7: Mean table (other than 3c) receipts by period.

Mean number of times IEEAF tables other than 3c have been received by Eurostat between 1999 and 2010, standard deviations for series' '99 – '04 and '06 – '10 range from 0.4 (f1 and f2, '99 – '04) and1.2 (1b '99 - '04)

As stated there were 14 unique participants recorded in the data used to produce Illustration 7 and the same data points were used in producing Illustration 8, detailing participant turnover (BG, CY, DK, EE, FI, FR, DE, EL, HU, LV, LT, NO, PL, SK). There were 4 occurrences in this data of countries participating in only one year:

1. Cyprus – participated for the reporting period 2000 and produced tables 3a and 4a
2. Denmark – participated for 2005 and produced 1a, 2a, f1 and f2
3. Finland – participated for 2005, producing all tables other than 2c and f2
4. Latvia – participated in 2003 as part of a pilot study funded by the European Commission and produced all tables except f1 and f2 (Central Statistical Bureau of Latvia, 2007).

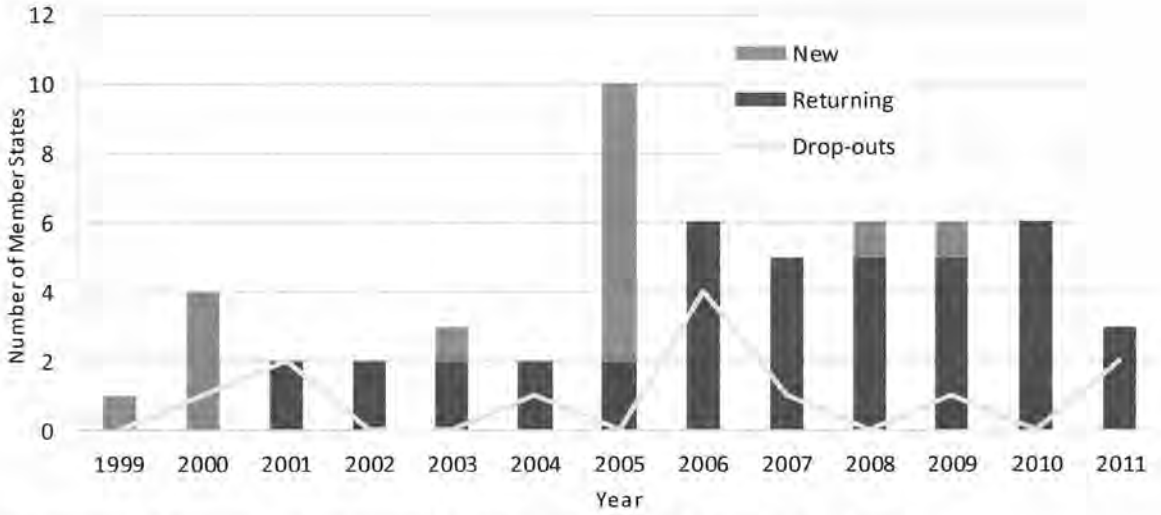

Illustration 8: Turnover of participants submitting a single table other than 3c.

What can be seen in Illustration 8 is the increased level of participation in 2005, the subsequent drop in participation for the period 2006 – 2011. The period 2006 – 2011 shows greater engagement by nations when compared to the period prior to the EAF being dropped as Eurostat's means of economic data collection. Opposed to Illustrations 4 and 5 one does not see drop outs every year. However it should be noted that for each year from 2006 to 2010 fewer than half of the number of nations for which 3c data is published, transmitted tables other than 3c. There are however, examples of consistent participation by (5) nations indicated in the "tables other than 3c" data received from Eurostat (Annex 1). These include:

1. Bulgaria – 1a, 2a, 2c and f1 for every year from 2005 – 2010; 2b, 2006 – 2010; and f2 in 2010
2. France – produced every table for the reporting years 2000 – 2006 and tables 1a – 3a for 2007 – 2010
3. Greece – produced table 1a every year from 2000 to 2010
4. Germany – produced between 5 and 10 tables in the years 2005 – 2011 with a mean number of 7.9 tables produced.
5. Slovakia – completed every table for 2006 – 2011

There is a current discussion at the meetings (Eurostat E3, Sectoral and Regional Statistics - Environment and Forestry, 2014a) about a 3 tier method of prioritisation, as well as the prioritisation cells and in the 2006 2nd revision of the IEEAF tables that make discussing tables 1 and 2 of greater practical relevance. What the crude numbers of tables transmitted do show, is that regular participation is feasible by some countries under the common European code of statistical practice. The proposed prioritisation is discussed under the 2014 Task Force and Forestry Statistics Working Group. However before considering the recent developments it is worthwhile to discuss the content of the current IEEAF tables, and their use.

Table 1a Forest Balance: Area of Wooded Land

Table 1a gives the area of wooded land in 1000 hectares starting from opening area and progressing through changes due to:

1. Changes due to economic activities

    1. Afforestation
    2. Deforestation
2. Other Changes
    1. Natural Colonisation
    2. Natural Regression
    3. Other
3. Changes in Use/Status (wooded land)

Data for these categories are entered as positive or negative depending on their nature and summed to generate the closing area. The categories are requested in two forms, Available for Wood Supply and Not Available for Wood supply. Eurostat prioritises cells that are most interesting by highlighting them yellow. The most important cells for Member States to fill out are "Changes due to economic activities" in "Available for wood supply" areas; the totals for "changes due to economic activities" regardless of availability for wood supply, and the closing areas for both "Available for wood supply" and "Not available for wood supply"

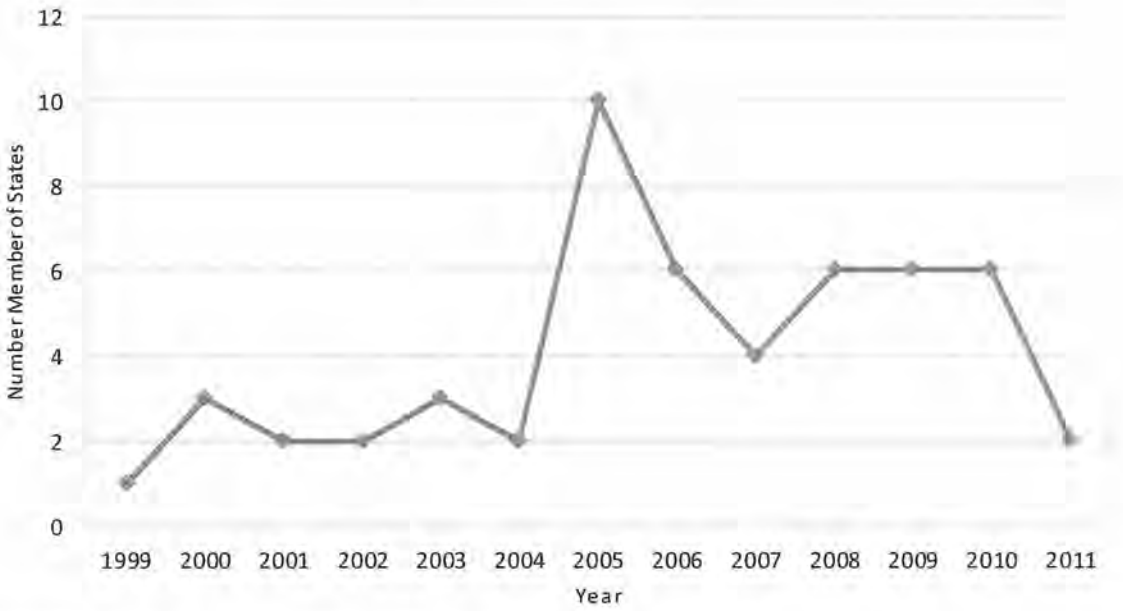

Illustration 9: Yearly receipts for table 1a.

Participation in providing 1a was recorded for at least 1 member state prior to 2005 (Illustration 9). Additionally, but not shown on this chart is that Bulgaria, France, and Slovakia provided data every year between 2005 and 2011, Germany also reported for 2005 - 2011 except in 2007. This implies that the requirements are not impossible to fulfil on an individual or, on an annual basis, but that many states do not submit the tables as a matter of course.

Eurostat have previously proposed to use Tables 1a and 2a to collect yearly running estimates of forest balances for use by Eurostat, FRA, MCPFE, and OECD and for LULUCF reporting (Eurostat E3, Sectoral and Regional Statistics - Environment and Forestry, 2011).

Table 1b Forest Balance: Value of Wooded Land

Table 1b follows a nearly identical categorisation as 1a. Its purpose is to express the information in 1a in monetary units. This is achieved with the addition of two extra rows specific to expressing monetary value instead of area. The additional items are to allow correspondents to insert details regarding changes in classification, and re-valuation. Changes in classification refer to land changing from available for wood supply to not available for wood supply, for

example. The changes will be listed as positive in one category and negative in the other and the sum must equal 0. Re-evaluation refers to changes in value over the course of the reporting period due to market fluctuations.

Table 1b deals with the values of forest land area that are set out in 1a. As was noted in the pilot studies such estimates can involve some work (European Commission and Eurostat, 1999). The values requested in 1b are for the economic value of forest land based on forestry rents and therefore include the productive capacity of the land, but do not include the value of standing timber. Standing timber is considered work in progress and is dealt with in 2a (volume) and 2b (value). It should also be noted that land not available for wood supply also receives value through this method that is based on its productive capacity even though it is subject to land use other than timber production.

The suggested method for valuing forest land for 1b is to use transactions in forest land which may or may not be stratified by certain descriptive factors such as age, species (in practice this was shown not to matter for Germany during the 2000 pilot), or land properties. The difficulty in using market transactions as a basis for forest valuation includes the rarity of such transactions and the fact that they often include forest land and standing timber as a parcel.

Additionally countries such as France were noted in the pilot studies to have highly heterogeneous national forest structures, uses, and climatic conditions. In such cases, finding representative sets of examples of transactions for all forest types, would be more difficult.

Where transactions in bare forest land are available it is suggested that these should be adopted to generate values. In other cases where a separation between standing timber and forest land is not automatically made it is proposed that stumpage prices should be used to establish the value of timber, and by subtracting, the value of forest land. In cases where stumpage prices are not available, the value of the standing timber must be estimated and subtracted from the transaction value, to give the value of bare land. This requires assumptions and in cases, for instance, where timber is valued at the roadside the costs of felling and transportation to be estimated and subtracted from the roadside value to achieve an estimate of the value of standing timber. Other suggested methods for valuing land were employed in the pilot studies and include hedonic pricing, which was tested in the German case. Hedonic pricing involves using shadow prices as suggested above but also an analysis of factors such as, age, elevation, species composition and parcel size, which affect transaction prices in order to refine the estimate. In theory this creates a more accurate pricing model. Finally, in the case of Sweden, there existed a recognised proportion of the value which could be attributed to forest land (7%) (European Commission and Eurostat, 1999).

Table 2a Forest Balance: Volume of Standing Timber

Table 2a deals with gross increment, closing stocks, and total removals in volume units (m^3). The purpose is to collect data on the volume of standing timber which, according to ESA rules, should be valued separately to forest land. The definitions used for 2a are those of the Forest Resource Assessment, conducted by the UN ECE. The data refer to the volume of recoverable timber in a forest and this includes dead or fallen, recoverable timber. Figures requested include Gross increment and removals, however recently a more complex table has been proposed which includes space for net increment and mortality. Participation has remained low for 2a.

Table 2b Forest Balance: Value of Standing Timber

Table 2b deals with the value of growing stock documented in 2a. Prioritisation (yellow cells) from Eurostat draw focus to the portion of growing stock that is Available for Wood Supply (AWS) with the parameters: Gross increment, total removals and closing stocks.

To establish the value of standing timber the stumpage price method is suggested for completing 2b (as with valuing forest land in 1b). Where stumpage prices are not available the

value of standing timber should be established as a residual of raw wood output (as defined by CPA). Again, as with the method established in the pilot and test applications standing timber values are to be estimated by using an associated market transaction (shadow price), further down the logistical chain, which is then adjusted by subtracting the costs of felling and transport to arrive at an estimate of the value of the standing timber.

Continuing from 1b where land not available for wood supply was given a value, it is stipulated that standing timber not available for wood supply should be given a value of 0. This is also the case for timber that is de-facto unrecoverable (due to high harvesting costs, for example). However, since standing timber is valued by transactions and given the long rotation periods of forestry, in the case of non-viability these are likely to be absent, but such absence is hard to identify. Capturing non-productive stands in the economic accounts might prove difficult without additional data. Furthermore, valuing standing timber that is eventually listed as used for own consumption might also prove problematic because such stands might be difficult to identify by national accountants, may be over mature, and while standing timber that will eventually be used for own consumption has a positive value, this might be different to timber that is to be sold. Own consumption is included in the value of forest product output (3a) but the separation of final use is not made when estimating the value of standing timber. This means that average prices applied to standing timber will likely have large deviations due to examples such as the relatively high value of timber destined for sale to saw mills compared to small farm forests that have timber stands destined for internal use as fuel wood, where harvesting near to maturity and timber quality are not management priorities. In addition, this variation is not likely to be equal for all member states given variations in the national structure of forest ownership, use and management objectives.

Table 2c Defoliation Extent

The function of table 2c is to collect data on defoliation extent in European forests according to the UN classification of >25% crown defoliation, there is also a column to list data on the associated standing volume, however this is not linked to an economic function.

Table 3a Goods Output

3a deals with the forestry goods output which is listed in rows by product categories according to the CPA classification and then by columns listing the associated NACE revision 2 activities. Finally 3c aggregates the gross output which is goods and activities form 3a, plus services. This is done according to products and their associated activities and includes forest services; which are a portion of output where the activities and goods produced cannot be separated. As discussed 3c is the most frequently populated table with the number of figures for which values are published ranging from 20 in 2005 to 17 in 2010 (Illustration 3). In contrast 3a is less frequently supplied and data is yet to be published. Participation reached its highest point (4) in 2005 and has in recent years been between 2 (2006) and 3 (2010) participants (Illustration 10). However, it is plausible that 3c will become more interesting as it becomes desirable to track the production of goods such as fuel wood for own consumption, for which incentives might be created, due to increasing the value of fuel wood from programmes such as the UK's Renewable Heat Incentive ("Renewable Heat Incentive - GOV.UK," n.d.).

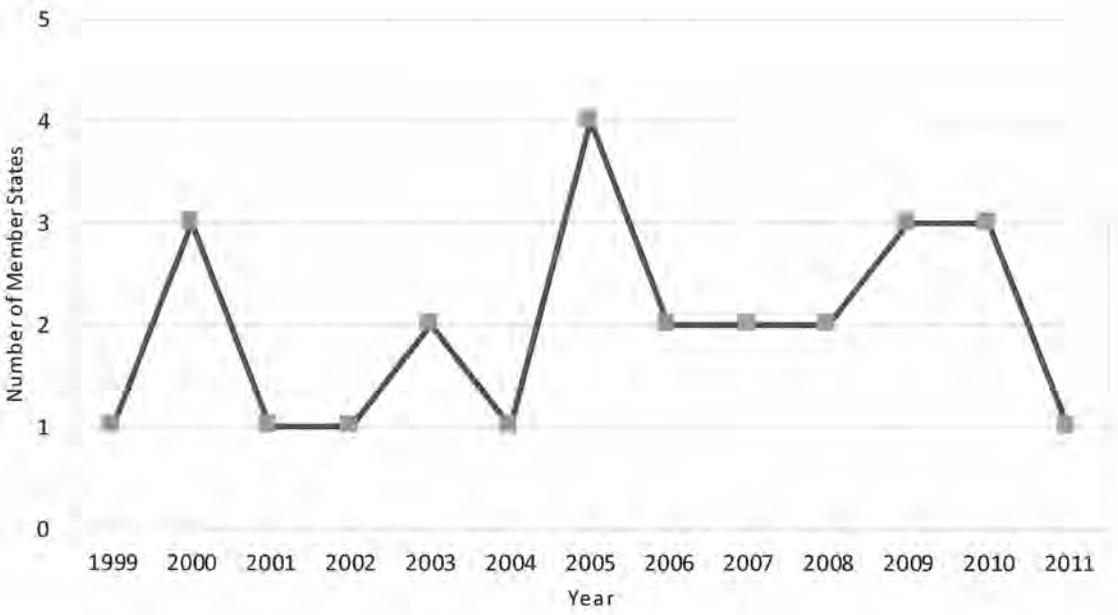

Illustration 10: Number of states for which 3a is available.

Table 4a/b Supply and Use

Tables 4a and b are the supply and use physical tables. Exports and totals receive prioritisation. These tables deal with intermediate consumption by industries. Detail for supply and use are in the same format as the European System of Accounts but deal with physical units rather than monetary values. It is not clear if data should be derived from trade information on volumes or derived as a function of the traded value of timber products reported in the national accounts.

5a/b Supply and Use Monetary Tables

5a and b are the forestry specific breakdown of supply and use as in the ESA, in monetary units. In addition, final consumption is broken down into durable and non-durable uses – an important separation when calculating carbon balances.

f1 and f2 Carbon Balances

Tables F1 and F2 contain CO_2 information and have been rarely used, for reasons that are covered in the discussion concerning LULUCF reporting at meetings and through the consultations. These documents are reported on later in these results.

It should also be mentioned that the prioritisation idea was proposed as a part of the 2008 IEEAF revision discussed above. This recently developed into a stronger "tier" system, suggested at the 2014 working group. The proposed tiers would create three levels of priority for tables. This will perhaps satisfy the suggestion by the UK's representative from the Forestry Commission, Sheila Ward, that Eurostat might have more success by focusing on a smaller number of simpler statistics ("2012 Eurostat Consultation on IEEAF," 2012). The results of this consultation are important in understanding the work that Eurostat has recently undertaken in focusing on increasing participation of tables 1 and 2. This work then continued after the 2012 working group in 2013 at the Eurostat task force where changes to tables 1 and 2 were further discussed. It makes sense to cover these recent developments chronologically so as not to confuse the various versions and the rationale behind any changes from the tables (2006) currently in use. LULUCF reporting and the IEEAF are further discussed on page 51.

2012 proposal and subsequent consultation

Eurostat proposed in 2011 "to use Tables 1a and 2a to collect yearly running estimates of forest balances for use by Eurostat, FRA, MCPFE, OECD and for LULUCF reporting" (Eurostat E3, Sectoral and Regional Statistics - Environment and Forestry, 2011). During the forestry statistics meeting in 2011 national correspondents put forward that any such umbrella function, such as that proposed for tables 1 and 2 would need to be coordinated with UNECE and FAO to make sure that reporting burdens were alleviated (Eurostat E3, Sectoral and Regional Statistics - Environment and Forestry, 2011). In 2012 Eurostat sent out a consultation, that requested comments on 5 table propositions titled 1a, 1b, 2, 2a, 2b *("2012 Eurostat Consultation on IEEAF," 2012)*:

"As agreed during our last working party meeting in November 2011, we are sending you five draft tables on forest area and wood volumes. We ask you to kindly review them and to send us your remarks by 31 May, particularly concerning consistency and realism. The tables are an adaptation and extension of the first four current IEEAF tables, which you can find on Circa under Forestry statistics in the IEEAF folder (please see link below, should you not have access, please sign up in the system). As discussed during the meeting, these tables should cover all the reporting requirements on forest resources for FAO, MCPFE, LULUCF and OECD on a yearly basis by collecting running estimates of the summary variables of forest inventories. They are therefore quite detailed. In particular, there may be some items that cover "other" variables that are redundant. We didn't want to completely depart from the current tables and therefore left more variables in them than may be needed. We also tried to cover the overlap between forestry and agro-forestry areas that has led to double counting in the international surveys."

*The following sub-sections are descriptions of these tables with most of the details from the consultation dealt with by topics, starting with "*Member state positions on the IEEAF based on information available on the proceedings of Eurostat meetings and 2012 consultation*", on page 48.*

Table 1a/b: 2012 proposal description

The 2012 proposal for table 1a aims to provide forest area at the beginning and end of the year with various causes for change in area across four categories of land with tree cover. Land with tree cover is broken down into four main categories with further sub-divisions. This is an expansion of the two categories available for wood supply and not available for wood supply in the 2006 rev. 2. Available for wood supply, was listed as a sub category of "forest" and "other wooded land".

The 4 main categories are Forest, Other Wooded Land, Other Land With Tree Cover and additional LULUCF area. LULUCF area was included as a balancing row because due to the old FAO definitions used in LULUCF reporting some nations experienced that totals of data provided to Eurostat might differ from those submitted for carbon balance accounts. The first column of information requires opening area of wooded land which is defined as the closing area from the previous reporting period. The table then logically proceeds from left to right with nations providing changes (+/-) due to economic activities, changes due to natural causes, other changes, and changes in use status. The "change in area" items are then summed to arrive at that years closing area. This is a transposed version of the 2006 revision with the categories of land type and availability listed in rows to allow more detail. The same transformation was applied to 1b, dealing with the value of forest land using the same categorisations.

Table 2: 2012 proposal description

Table 2 was an alternative to the proposed 2a/b however this was not understood by at least one respondent (CH) who replied that there appeared to be redundancies between the 3

proposals for table 2-. This proposed table again expands Available for Wood Supply and Not Available for Wood Supply into the four categories described above, including additional LULUCF area. Removals are also divided into: roundwood and fuelwood. This last change was regarded as unnecessary by DE who pointed out that table 4a exists for this purpose. Switzerland and Germany also commented that the proposed "removals over bark" field would not be completed by them due to lack of data. FR and SI commented that a differentiation of removals into roundwood and fuelwood could not be made ("2012 Eurostat Consultation on IEEAF," 2012).

Table 2a/b: 2012 proposal description

The proposal for tables 2a/b is to expand total removals into a more detailed breakdown of fellings and natural losses. Fellings are further split into logging residues, removals over bark and logs not removed. Natural losses includes removed over bark and not removed.

2013 Task Force

What became apparent from the 2013 Task Force, was that tables 2 and 2a (proposed for the 2012 consultation) were options with only one to be carried forward, however one nation responded to the 2012 consultation as if both tables were proposed requirements (CH). This implies that perhaps the either/or nature of these tables could have been better communicated by Eurostat as this misunderstanding might have led to correspondents perceiving the tables as more demanding than they really were.

Differences between FAO held data on forest extent and the data gathered by remote sensing, applying FAO definitions were highlighted at the 2014 working group by Marilise Wolf-Crowther. Eurostat's work comparing their Land Cover/Use Statistics (LUCAS) survey with area reported to FAO were presented with the purpose of highlighting that harmonised definitions do not appear to be strictly followed in every case.

Eurostat stated that it would be useful if countries filled out "additional LULUCF area" in table 1 as a balancing and verification item. The Polish statistical organisation representative added that LULUCF is handled by the organisation responsible for NFI and that submitting LULUCF data would require extra work.

It was decided that the question of "should LULUCF area be included in the main total of 1a or simply as a reporting line?" would be put to the next working group. The rest of the observations made at the Task Force are included by topic below and in full in Annex 6.

Member state positions on the IEEAF based on information available on the proceedings of Eurostat meetings and 2012 consultation

Justification for the work on IEEAF by Member States

The justification of voluntary work is approached in this thesis by assuming that as there are costs involved in carrying out the work there must be perceived benefits to be obtained in order for the work to be carried out. The work required to complete IEEAF is likely to be dependent on the data already available, many nations stated that additional work would be required when consulted in 2012 (AT, DE, PL, CY, SI, CH, and CZ). Switzerland and Germany both mentioned that because of the unknown additional work required they were not able to comment on feasibility. In the case of LM in Austria, the interviewee stated that he did not see the benefit of such accounts and as such would not have a reason to find additional resources, he also mentioned that it is not always possible to fund every project, meaning that resources would need to be redirected from other activities (Annex 3).

This poses the problem that in addition to requiring an incentive to complete the additional work, there remains no clear mode of funding. In the case of the statistical organisation

interviewed (STAT), the message was clear: if there is a legal mandate then they must do the work but otherwise it would need to be completed under contract to another ministry (Annex 4). As mentioned, it was proposed that the IEEAF could serve the purpose of explaining discrepancies in LULUCF figures during the 2013 Task Force (Annex 6).

In the case of Austria, the national inventory would be produced at around 7 year intervals (the frequency of National Inventories is not exact). STAT would be responsible for estimating yearly changes in forest land for the IEEAF, at the current t-2 time scale, every year until the new inventory was ready, which would in turn mean basing estimates on the previous years' figures, which were themselves, estimates. This situation is also a concern for at least one other state, Cyprus: who responded to the Eurostat consultation in 2012 saying that the tables would require revisions in NFI years ("2012 Eurostat Consultation on IEEAF," 2012).

In Austria government statistical organisations are not able spend public money unless sanctioned to do so, either by legal mandate or under contract to another ministry (Annex 5). Even in the case where undertaking the work has legal basis a statistical organisation would need to justify publishing data that might be inconsistent with established institutions (NFI), and would need to be able to explain of the accuracy of the new data, and the reasons for variations. When asked at the 2011 Forestry statistics working group:

"Do you agree that it would be useful to have yearly data on wood area and volume available in the detail needed to serve different purposes?"

3 of 21 countries included in a table of responses (IT, SE and EE) specifically cited concerns with regards to the accuracy of estimates that would need to be made (Eurostat E3, Sectoral and Regional Statistics - Environment and Forestry, 2011).

As was shown in the introduction, even establishing estimates for the value of forest land requires multiple and sometimes stacked estimates. In the case of valuing standing timber, a lack of stumpage price data can also require multiple assumptions to arrive at the asset value. STAT pointed out at interview that they are bound by the European Union Statistical code of conduct, which among the obvious statements on professional responsibility to provide reliable statistics, also mentions a responsibility to ensure an adequacy of resources, as well as commitments to punctuality and coherence (European Commission and Eurostat, 2011). If a statistical organisation were to agree to any work it would have to first investigate any uncertainties and investigate how much time and money should be allocated in order to comprehensively address the issue (European Commission and Eurostat, 2011). Working under contract or legal mandate, a statistical organisation would have to disclose if data were thought to be unreliable. Statistical organisations are obliged to comment on inaccuracies, and in this case should act independently from political pressure (European Commission and Eurostat, 2011).

In the case of the IEEAF evidence that the accounts were reliable would most likely come from regular and complete participation from a number of nations. However, the question of the accounts reliability and usefulness is not a factor in their voluntary status. In 2011, Italy proposed that given the finite budgets of ministries, extending requirements would necessitate legislation. Eurostat responded that the then current preference was for framework legislation and that mandatory European Statistical System (ESS) agreements were to be used only at the highest levels (Eurostat E3, Sectoral and Regional Statistics - Environment and Forestry, 2011).

Nevertheless, as of September 2014 reporting the value of all land will become mandatory under ESA 2010 balance sheet item an11.52 (European Union, 2013). This might make the work for estimating items such as land area and value in tables 1a and b mandatory by proxy, which would make participation more attractive.

Having agreed to undertake the work and provide data, it would need to be undertaken with uncertainties over the asset estimates until figures were compared to the established national inventories. This view over discrepancies between asset accounts and forest inventories was expressed by Finland (Email 8).

"If and when the forest balances will be published, it should be clearly shown how these balances differ from NFI data and other forest *reporting."*

It is not immediately clear what justification for producing such yearly information would look like. However, the representative, Jukka Muukkonen of Statistics Finland stated that they expected (in 2012 correspondence to Eurostat following consultation) balances to become a requirement of the ESA (Email 8). In contrast METLA Finland (an environment/forest ministry), were in principle strongly against increasing requirements and stated their view that Eurostat should focus on the JFSQ ("2012 Eurostat Consultation on IEEAF," 2012).

As yet there has been no discussion on possible misuse, or any mitigation for the associated risks. Examples of such a discussion might be, "which data if estimated are likely to be inaccurate or widely misinterpreted or misused?" This was declared by 4 countries, to be a concern at the 2012 working group (Eurostat E3, Sectoral and Regional Statistics - Environment and Forestry, 2012):

"Mr. Mozes (Eurostat [statistician]*) asked whether running estimates are not produced by countries for their own planning purposes in the years between NFIs. AT, SE, NL and IE responded that the text produced by the ad-hoc Working Group on forest information makes it clear that*

1. *Only the periodical data of NFIs are considered to be sound,*
2. *There is a risk that estimates could be taken to be real data, and*
3. *There is a risk that the NFI results could significantly differ from the estimates."*

It might prove necessary to address these concerns as it appears there are two groups of views. First, the view held by France and Germany, who when asked in 2011 if they thought it would be useful to have annual data covering several purposes answered yes *(Eurostat E3, Sectoral and Regional Statistics - Environment and Forestry, 2011)*:

FR: *"Yearly data are preferable because for each reporting exercise, we have to use slightly different definitions. The data breakdown must take into account what is available in the countries."*

DE: *"it would be useful to harmonise to reduce the burden on the reporting agencies."* -

and secondly, countries that are dubious of the usefulness of annual iterations of forest statistics (AT, SE, NL, IE and UK). The members of the second group seem unlikely to participate even if parallel reporting requirements necessitate yearly data at a higher hierarchical level. However, members of both groups have voiced concerns over accuracy and the problem of differentiating between inventory and estimated years (AT, FI, IE, SE, and NL). In such cases it would be worth discussing other obligations where estimates are made, and if accuracy is in these cases a concern, would it to be possible to publish more accurate data through the IEEAF.

While doubts exist, there is a process of yearly meetings where correspondents regularly provide feedback, meaning that the tables should continue to improve in both their function and by reducing the additional work they require, and the perceived usability by member states. At least one country (DE) stated in 2011 that they use the accounts to generate statistics for German LULUCF data. However France also stated at this time that they had attempted to reconcile IEEAF and LULUCF reporting requirements and had failed (Eurostat E3, Sectoral and Regional Statistics - Environment and Forestry, 2011). If tables are to fulfil specific goals in order to improve voluntary participation then it seems that these goals must be directly addressed. To this end, the more recent discussion on covering LULUCF requirements using IEEAF tables is addressed below.

Concerns Regarding the Use of IEEAF Data

As is clear from the question posed by Mr. Mozes (mentioned above) at the 2012 forestry statistics meeting, in addition to other reporting requests there are several factors that are likely to affect participation in the IEEAF. These were also highlighted by Sekot, (2007):

1) There are concerns over redundancies and inconsistencies
2) There are concerns over how the data will be handled and which comparisons might be made
3) The relevance and goal of the accounts must be highlighted.

Regarding the voluntary nature of the accounts, while the submission of data has occurred in the past it might be that national organisations are not able to make resources available for regular extra work without it being requested within their respective national legal frameworks. As discussed later, the position expressed by some countries engaged in the IEEAF discussion process is that filling out the tables constitutes additional work to the extent that it would require further funding (AT, Annex 5; SI, UK, ("2012 Eurostat Consultation on IEEAF," 2012); .

In order to deal with inconsistencies the European commission's news service announced in 2007 that the EAF and IEEAF were merged in 2006 (Science for Environment Policy, 2007). In effect this took place for the reporting period 2005/6 (Eurostat E3, Sectoral and Regional Statistics - Environment and Forestry, 2008, 2008), with member states to submit data in 2008. Often members argue that the Land Use, Land Use Change and Forestry (LULUCF) reporting within the IEEAF might be redundant as the voluntary nature means that in most cases producing additional data must be justified and officially requested and that reproducing data submitted elsewhere might not be meaningful (due to not all the LULUCF components being covered by the IEEAF, for example; AT, ("2012 Eurostat Consultation on IEEAF," 2012)) or that member states are responsible and this should not change (AT, FI, "2012 Eurostat Consultation on IEEAF," 2012).

Finally, to address the lack of information regarding the aim and relevance of the IEEAF Eurostat has created an internally administered wiki on the IEEAF with national correspondents invited to contribute (Eurostat, 2013, personal communication). Participation in providing this information is yet to be seen and the wiki is not yet publicly accessible. The latest Eurostat "Forestry Statistics and Accounting Working Group" included an update on the IEEAF which included a presentation at the meeting and a companion document made available to correspondents prior to the meeting (Eurostat E3, Sectoral and Regional Statistics - Environment and Forestry, 2014a; Wolf-Crowther, 2014). In addition a draft work programme was provided but is yet to be finalised, has a notice not to quote, but is available online via the CIRCABC database section for Forestry statistics (Eurostat E3, Sectoral and Regional Statistics - Environment and Forestry, 2014c).

Relevance and goal: LULUCF

Data pertaining to carbon balances, reported as part of the Kyoto agreement are dealt with through LULUCF reporting and would be covered in f1 and f2 of the IEEAF. As noted earlier these are rarely used (page 46) with the greatest number of participants in a given year being 7 for f1 in 2005 (Illustration 11). The reason for this is that the correspondents to the Forestry Statistics meetings are not always those responsible for LULUCF reporting, only Germany have stated that they directly use the tables for this purpose (Eurostat E3, Sectoral and Regional Statistics - Environment and Forestry, 2011).

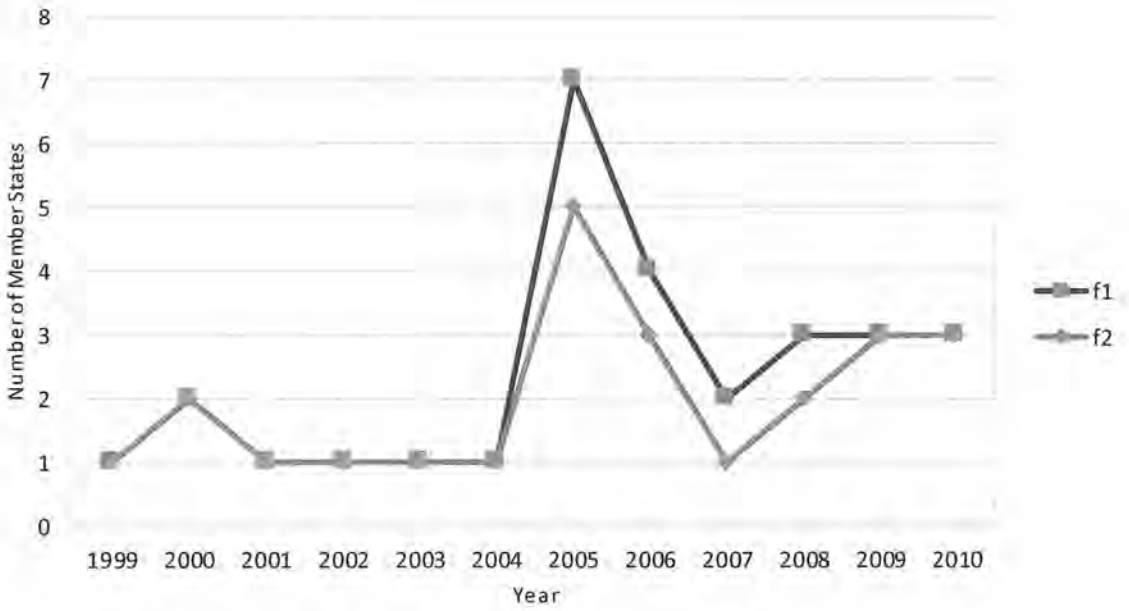

Illustration 11: Receipts for tables f1 and f2

Both Germany, and Slovakia produced the table regularly between 2005 and 2011 with Germany skipping 2007. France provided data until 2006 and Bulgaria table f1 between 2005 and 2010. This means that widespread use, as Germany suggested in 2011, in meeting LULUCF reporting requirements is unlikely. However, carbon balances are not the only use IEEAF tables might be put to in relation to LULUCF data. As explained by Slovenia in 2012:

"FAO use 0.5 ha as a benchmark for the definition of forest whereas UNFCCC use .25 ha" - ("2012 Eurostat Consultation on IEEAF," 2012)

The reporting line additional LULUCF area was included in the 2012 proposals for tables 1- and 2-, in order to capture this envisaged discrepancy between international forest statistics. At the 2013 IEEAF Task Force Eurostat re-iterated that the 'additional LULUCF area' rows might be used to understand differences between forest area data held on the FAO database and other forest area statistics (Annex 6).

It was proposed that 1a should include a row for 'additional LULUCF area', Spain, agreed with a statement by Sheila Ward of the Forestry Commission (UK) that this figure might be negative (Annex 6). Eurostat responded that this would be acceptable and that it was important to address the different definitions in use as shown in "Annex V" of decision 529/2013/EU (European Council and European Parliament, 2013).

Sheila Ward also suggested in a separate statement that including LULUCF data would be difficult because different organisations are responsible for IEEAF and LULUCF reporting in the UK. Additionally it was mentioned that in the UK LULUCF reporting has separate definitions from other forestry statistics where more up to date definitions are used (Annex 6).

In the UK the Department of Energy and Climate Change is responsible for LULUCF reporting while the Forestry Commission deal with NFI data. The ONS are also currently responsible for producing pilot forestry accounts for the UK (Email 5) This situation is indicated to exist in other countries since Eurostat have requested communication between relevant parties to be increased (Eurostat E3, Sectoral and Regional Statistics - Environment and Forestry, 2012). This request was repeated at the 2013 working group: Eurostat would like to see communication between national organisations responsible for the various reporting obligations (Annex 6). This was stated to happen in Sweden: at the 2013 IEEAF Task Force

the Swedish representative informed the group that main Swedish data organisations meet annually to discuss LULUCF reporting (Annex 6).

The points made by the UK, underline Eurostat's proposals that organisations dealing with forest statistics should communicate, and that different reporting obligations may result in different figures.

The chair of the 2013 Task Force on IEEAF, Rainer Muthmann, observed that Strategically, Eurostat should include LULUCF in the IEEAF tables because of the LULUCF review in 2020 (Annex 6). This is because (Annex 6):

"Statistical and methodological considerations are not considered after the beginning of a political process'."

Meaning that, if correspondents wanted to use the IEEAF to explain differences in reporting obligations, they would have to start working to this goal now. The Chair then went on to point out that showing the differences between LULUCF data and other statistics is a useful exercise as this would make such peculiarities clear and avoid confusion.

Relevance and goal: Other Requirements

National correspondents appear resistant to providing statistics in many formats, as well as the statements by DE and FR in support of consolidating reporting requirements (Eurostat E3, Sectoral and Regional Statistics - Environment and Forestry, 2011), Nations responded to the 2012 consultation referring to the proposed tables as repeated work, rather than an alleviation of reporting burdens (AT, CZ, PL, SI). However, PL stated that they are working on a programme to estimate a "significant part of the data for included in IEEAF tables", while CH, CY and FI referred to the capacity of the tables to reduce reporting requirements.

Harmonisation

It is only recently that a gradual, process of inventory harmonisation has occurred in the field of forestry statistics, according to Johannes Hangler (Annex 3) this is due to:

1) International arrangements such as the JFSQ
2) International definitions such as NACE rev 2 and those provided by the FRA (FAO, 1997)
3) The production of documents such as the SoEF (Forest Europe (Organization) and Liaison Unit Oslo, 2011)

These processes passively guide national ministries to produce more homologous statistics. In the case of the SoEF this has been a gradual process and requires companion manuals for individual nations to describe the provenance of data (Annex 3). This highlights one theme in such compound statistics, that the summary documents - without further explanation - might be misleading.

The recent discussion on definitions has proceeded with Eurostat progressing towards using the IEEAF to address discrepancies in definitions used. At the 2012 working group Eurostat expressed a view regarding different definitions which countries might apply, indicating that differences are tolerable as long as nations are themselves consistent across time series and that the differences in definitions applied are transparent (Eurostat E3, Sectoral and Regional Statistics - Environment and Forestry, 2012).

"Eurostat can accept this situation as a basis for its statistics because forests actually are very diverse ecosystems in the different bio-geographical areas of the EU. As long as the Member States consistently apply their own definitions for the reporting, comparisons over time remain possible. We believe we can accommodate the needs of the Member States and identify comparable data by breaking down the FAO framework definitions into their components."

Regarding transparency Eurostat noted at the 2013 task force that the LUCAS survey conducted in 2009 showed that FAO definitions are not applied consistently throughout Europe. A current proposed use of the IEEAF is to provide further information on how nations classify their forests using FAO derived headings within the tables, and an exhaustive list of sub-headings to cover the different data that are collected across Europe (Eurostat E3, Sectoral and Regional Statistics - Environment and Forestry, 2014a).

As implied there are a number of different possibilities for definitions that might be used by different national and international reporting organisations to describe forests (FAO, 1997), forest products (Eurostat, 2008b), and economic activities in forests (Eurostat, 2008a). In addition to own national definitions (European Council and European Parliament, 2013) Regarding definitions of forests, at the 2013 Task Force Eurostat presented the various definitions used by EU and EFTA states, and those stipulated by the FAO. It was shown that 9 countries fully comply with the FAO forest definition (FAO, 1997) when reporting on emissions (European Council and European Parliament, 2013). Of the differences Estonia uses a lower tree height, 7 countries a smaller area, 6 countries a lower tree height and a smaller area, Portugal uses a larger area and Spain, a larger area and a lower tree height to define forests (Eurostat, 2013). This data demonstrates two common themes,

1) That national comparisons would be difficult to sensibly make, given the difference in forests and respective forest definitions in use
2) That there is a need to describe the differences between the definitions used to produce data where they are presented as part of the same statistical exercise

Eurostat do not have their own annual data on forest area. The LUCAS produces forest area information and applies FAO definitions consistently across EU nations. However the survey does not provide this data on a yearly basis. Additionally while the LUCAS does classify forest and Other Wooded Land (OWL), it is not able to delaminate forest available for wood supply. For these reasons Eurostat preliminarily uses FAO/FRA data on forest area available at 5 year intervals. This is considered to be less than ideal however, as it was presented at the 2013 task force, that there are some quite large differences between area data from SoEF data and those gathered by the LUCAS. Eurostat presented graphs which showed a 20 – 70 pc larger area for 3 countries (Spain, Greece and Ireland) recorded in the 2010 FAO dataset than were recorded by the LUCAS in 2009, which applies FAO, FRA definitions across all countries. The conclusion reached by Eurostat is that the data they use from FAO, while official, are not harmonised (European Council and European Parliament, 2013; Wolf-Crowther, 2013).

Eurostat have argued that the LULUCF data held on the FAO database differ greatly to items such as the LUCAS survey conducted by Eurostat (Wolf-Crowther, 2013), and that having a reporting line for covering and explaining differences in reported LULUCF area would indeed be meaningful (Annex 6). Decision 529 offers the following as explanation why nation specific definitions have been adopted (European Council and European Parliament, 2013):

"Since the objectives of this Decision, namely setting out the accounting rules applicable to emissions and removals resulting from LULUCF activities and the provision of information by Member States on LULUCF actions cannot be sufficiently achieved by the Member States due to their very nature, and can therefore by reason of scale and effects of the action be better achieved at Union level, the Union may adopt measures, in accordance with the principle of subsidiarity as set out in Article 5 of the Treaty on European Union. In doing so, the Union should respect the competences of Member States as regards forest policy. In accordance with the principle of proportionality, as set out in that Article, this Decision does not go beyond what is necessary in order to achieve those objectives,"

Member states should be responsible for measuring and defining forest in their respective countries and the EU will collect and monitor this information for them. However the EU recognises that different countries have their own forest competencies and should define forest and report changes on their own terms. Eurostat's proposed use of the IEEAF as an umbrella function would be to explain these differences.

Concern exists that where different national ministries are responsible for reporting to international organisations using different definitions, figures that appear to measure the same property might differ for reasons that are not clear to non-expert users (Johannes Hangler, 2013). In the case of LULUCF and European emissions reporting some statistical organisations use FRA definitions form 1990, 2000 or neither. LULUCF reporting is due to be revised in 2020 (Annex 6) but as Eurostat has shown this might not mean that data are truly harmonised. Eurostat has stated that it would like better communication between LULUCF reporting and IEEAF correspondents and may position the accounts to verify LULUCF data from the FAO database after the LULUCF review in 2020 (Annex 6).

In the 2012 consultation, METLA, Finland also expressed the view that different ministries were responsible for the various statistics, but suggested that Eurostat should biter engage with the persons responsible in the various countries ("2012 Eurostat Consultation on IEEAF," 2012):

"First, Metla appreciates the opportunity to give comments on the draft tables. We would like to emphasize, however, that the members of the Eurostat Forestry Statistics WG are not the primary target group to be consulted on this topic. The Eurostat objective with revised IEEAF tables is to replace "all the reporting requirements on forest resources for FAO, MCPFE, LULUCF and OECD on a yearly basis". Bearing this in mind, Eurostat absolutely needs to consult the leading specialists in forest resources assessments, i.e. the country correspondents to the FRA and Forest Europe processes. The key experts in greenhouse gas reporting also need to be addressed. The inventory experts (UNECE/FAO ToS on Monitoring Sustainable Forest Management) had a meeting last week, but Eurostat failed to participate. Without proper feedback from the ToS, Eurostat should not proceed in this exercise."

The FAO have studied the differences in land area reported using FRA 1990 and FRA 2000 exist. Comparing 27 countries in Europe the FAO found forest extent to be 895,155 ha*10^3 using FRA 1990 for the year 1990 and 1,051,321 ha*10^3 using FRA 2000 for the year 1990 (Forest Resources Assessment Programme, 2001).

Data Availability/Categorisation

There is a problem with AWS that was voiced by the UK. The UK response to the 2012 consultation regarding the IEEAF items in tables 1 and 2 "of which available for wood supply" was that ("2012 Eurostat Consultation on IEEAF," 2012):

"*For the UK, distinguishing between forest that is available for wood supply and forest that is not, is inherently subjective and therefore of limited value.*"

This refers to the second part of the Temporal Boreal Forest Resource Assessment 2000 definition of "forest not available for wood supply" regarding economic viability. However the first part (a) of the definition states (FAO, 1997):

"Forest where legal, economic or specific environmental restrictions prevent any significant supply of wood. It includes (a) forest with legal restrictions or restrictions resulting from other political decisions, which totally exclude or severely limit wood supply, inter alia for reasons of environmental or biodiversity conservation, e.g. protection forest, national parks, nature reserves and other protected areas such as those of special environmental, scientific, historical, cultural or spiritual interest; (b) forest where physical productivity or wood quality is too low or harvesting and transport costs are too high to warrant wood harvesting, apart from occasional cuttings for auto-consumption".

Information on part (a) is not readily available because harvesting may still occur protected areas. Additionally other limitations might mean that non-protected areas are not available for wood supply, depending on how this is assessed. The area of protected forest is available in the Forestry Statistics publication form the Forestry Commission (Forestry Commission, 2014). The 2013 Report from the Forestry Commission lists 207*10^3 ha of forest as under statutory protection in the UK. This indicates that due to the voluntary nature of the IEEAF national correspondents do not have any reason or desire to provide partial data that is available or

estimates without being obliged. A similar point was referred to in interviews at Austrian ministries, is that the work is not funded and making estimates is in this case, in no one's interest (Annex 3 and 5). Data submitted would likely be submitted based on an adapted version of what is available for internal use (AT, Eurostat E3, Sectoral and Regional Statistics - Environment and Forestry, 2012). This is the case for the FRA where country reports are produced to show where data provided differ from the proscribed definitions (Annex 3).

At the 2012 Forestry statistics working group AT, stated that the distinction between cultivated and natural timber is difficult and that using planted verses naturally regenerated forests was just a proxy. Anton Steurer (DG Eurostat Environmental accounts & climate change) had explained in this meeting that the IEEAF was currently based on the 2003 version of the SEEA which was not a statistical standard and that the new SEEA 2012 was a statistical standard meant to be used worldwide. Elsa Varela, of the EFI, working on the implementation of SEEA pilots through the CREEA project said that the focus was on cultivated and non-cultivated timber, and instead of using 'available for wood supply' uses planted verses naturally regenerated and does not record OWL. Austria pointed out that distinguishing older planted stands might be difficult (Eurostat E3, Sectoral and Regional Statistics - Environment and Forestry, 2012).

2014 Task Force and Working Group

Since the data collection for this thesis was completed Eurostat has conducted another working group. From the minutes the main points are as follows and conclude the information available for the formulation of this thesis.

In the case of the IEEAF, many national correspondents have reported that some data are not available at the time intervals requested or at the detail of categorisation ("2012 Eurostat Consultation on IEEAF," 2012). Thus, Eurostat has historically prioritised items within tables, and has recently taken this further, at the most recent Forestry Statistics Working Group, by proposing a 3 tier system of prioritisation for tables (Eurostat E3, Sectoral and Regional Statistics - Environment and Forestry, 2014a).

From the "reflections" document circulated before the meeting:

1. Three tier approach proposed
2. Approach to FAO definitions and non-compliance by providing redundant detail
3. Explanation of why reporting should be annual
4. Regulation 691 and material flows emissions and water accounts
5. As of 1 September 2014 it will be mandatory for all states to provide data on the value of land

Discussion

The situation in reference to other environmental statistics.

Material flow, air emission, and water accounts are mandatory as of 2011 in reference to regulation 691 (European Parliament and Council of the European Union, 2011). Carbon stored in forests is estimated yearly as part of Kyoto Protocol but not reported through the IEEAF on a widespread basis. The definitions used in reporting LULUCF and carbon balances are different definitions to those used in the TBFRA and are due to be renewed in 2020. The definitions used in regulation 691 of forests are also not compliant with other international reporting definitions such as the TBFRA 2000 (FAO, 1997). Additionally FRA data presented in the 2011 SoEF were shown to lack harmonisation Eurostat's comparison at the 2013 Task Force of LUCAS and FAO data (Eurostat E3, Sectoral and Regional Statistics - Environment and Forestry, 2014c; Eurostat, 2013). As discussed at the 2013 task force the IEEAF could gather and present reliable data on forests and forest extent that can be used to explain these differences (Annex 6).

The process of providing yearly statistics is advancing regardless of the developments in the IEEAF. As of September 2014 land values will be required as part of balance sheet item AN.1152 of the ESA (Eurostat E3, Sectoral and Regional Statistics - Environment and Forestry, 2014a). As well as discrepancies in forest extent reported through various obligations. It appears that a proposed future of the IEEAF accounts will be to address such issues.

Methods of valuing forest land require estimates and assumptions as in many cases there are no example transactions in bare forest land or standing timber. Even in cases where data exist, these must be extrapolated for the whole national forest asset. Biological assets are often not distinguished in transactions of forest land and must be derived. Given the uncertainties with valuing forest land in seems pertinent that nations should address these issues. This could take place through the IEEAF process which has conducted pilots to this effect, but this use remains uncertain.

For CO_2 storage, Eurostat argue that without official data in a centralised format it is difficult to understand differences in data that arise from collection methods or definitions. Clearing up such discrepancies between the various reporting obligations is another proposed use of the IEEAF

National forest account at the EU level seems to be behind at the EU level in that annual asset values and changes are not available. Additionally scientific literature has for some time held a discussion on non-market uses and functions of assets, but these questions can hardly be addressed before the value of assets according to economic activity is estimated. However, political will means that some (CO_2, forest land values) of the data which national correspondents say are not available for forests are being estimated regardless of the participation and progress in IEEAF. An important question this thesis cannot answer is the extent to which mis-estimations are likely to be made and can the IEEAF tables sensibly address these.

Therefore, it seems that in its current form the IEEAF aims to serve two separate purposes: accounting and verification of international statistics.

EU competency regarding forestry

The interviewee at the LM posed concerns over the level of competence regarding data at the EU level, citing longstanding statistics programmes such as Forest Europe, ITTO, and MCPFE as having established networks of correspondents and an institutional level of knowledge. Finland mirrored this concern with the response from METLA stating that data were collected by a number of different national correspondents for the various reporting obligations and that if Eurostat wanted to conduct an effective consultation they would have to do more than contact the Working Group representatives. In comparison to the ITTO, FRA and MCPFE processes it

was stated at interview and in a number of 2012 consultation responses (SE, FI, AT) that relative to these established programmes Eurostat had a lower level of competency. It follows that in order to improve confidence amongst forest statisticians in the IEEAF tables the relevant correspondents from these programmes would need to be contacted and organisational capacity improved in addition to discussing the cases where estimates of forest statistics have already been made through other institutions.

Given that such estimates are being made regarding carbon balances and land values, the correspondents' concern over lack of forest expertise at Eurostat might be misplaced. As stated, these data demands exist and are met regardless of IEEAF participation.

As yet there has been no discussion on possible misuse, or any mitigation for the associated risks (such as what will happen to data if it is proven to be inaccurate or widely misinterpreted or misused). Finally, those who would be responsible for the extra work do not have the incentive to allocate resources and compare, budgeting, risks, and benefits. There is also little motivation for the organisations of correspondents to internally investigate prevalent ideas about the IEEAF such as "possible inaccuracy" or "possible misuse". Such ideas do not necessarily need to be well formed to justify non-participation, but must be thoroughly understood in order to agree in theory to the usefulness and integrity of such accounts – a precondition to the discussion on how such work is to be funded. An opportunity could exist for Eurostat to continue to point out misleading data (as per the SoEF and LUCAS comparison at the 2013 Task Force) and show how the IEEAF might address these issues.

Conclusions Related to Lacking Harmonisation

Through the JRC and SFC Eurostat is in contact with other forest related statistics programmes. Experts are routinely invited to meetings and consulted on account developments and Forest Europe are invited and attendance was noted at Working Groups and Task Forces (in 2012 and 2013 respectively). However, it has been noted that the IEEAF demands require coordination between responsible persons and sometimes organisations in responsible countries.

In linking to other statistical standards the IEEAF was originally designed in compliance with the UN level SEEA 2003. However, SEEA 2003 was not a statistical standard intended to be put into use worldwide, and there is a newer 2012 version. As mentioned at the 2012 working group the SEEA is relatively vague due to its capacity in being applicable worldwide. An area of detail dropped by the SEEA was the distinction of other wooded land. While a similar proposal received many complaints due to lack of data in the IEEAF process, if the IEEAF aims to cover carbon balances it must be retain the data item.

The questions over data availability are important regarding the use of IEEAF. In some respects different definitions are used, but significantly, where data are not collected they must be interpolated or estimated. While Eurostat has moved recently towards discussing and addressing issues pertaining to lack of definition harmonisation, there are still no stipulated methods for valuation of standing timber, and therefore valuation of forest land. This lack of harmonisation means that any comparative use of such statistics must be carefully measured. If it is not possible to justify comparing statistics, then summing them to make regional figures might prove difficult to justify. If statistics cannot be compared when summed then it follows that the utility of presenting together them is questionable.

Not having a method for operations such as land valuation might create a more flexible environment that makes participation possible. However, this flexibility might also undermine willingness to participate and transparency. Willingness to participate is important due to the voluntary nature of the accounts. Furthermore stipulating a specific method might create problems that need to be overcome:

1) A chosen method might generate systematic errors in certain cases as per the IEEAF pilots (European Commission and Eurostat, 2000, 1999)

2) Such a situation would be reasonable grounds for non-participation according to the European Statistics Code of Practice (European Commission and Eurostat, 2011)

Once the data are presented in a unified format, comparisons will be intuitive regardless of methodological or definition differences. Successful exercises like the JFSQ, the EAF and table 3c, use available data with clear definitions for activities (NACE) and goods (CPA). Without the added value of providing a regional overview of the forest/economy relationship, the remaining use is to cover reporting obligations in a centralised location.

Consolidating reporting requirements is dependent on participation. For organisations to endorse completion of the IEEAF as a means of providing their own statistics they would need evidence that the information can be supplied by their contributors, in this form, in every case. Only then the IEEAF can replace the current processes of gathering information officially. Alternatively member states could use the tables to collate the required data and submit it on an individual basis, as is the case for Germany who stated that they use the IEEAF for LULUCF reporting.

The last consideration is temporal harmonisation, since inventories are completed at different times and much of the IEEAF data would be based on interpolations of inventory data, a problem remains that some years for some countries would be "inventory years" with higher degrees of confidence, requiring adjustment. The problem regarding comparability in this case is that such years would not be synchronised between nations.

Who are the potential users of the IEEAF information

The value of forestry work in progress is high in comparison to GVA due to the associated length of production cycles. In years of large storms, large changes may also occur, hence the request for a timber yard by Germany in 2012 and 2013. Knowing the value of biological assets and the associated land value is also important in explaining changes in forest structure and timber uses in the long term. It might be that Environmental policies affect the attractiveness of timber as fuel wood, and such future uses may result in changes in wood use and forest structure.

Addressing the economic value of public goods provided by forests has for many years been a topic in scientific literature (see introduction: TEV). But, this hardly seems like a logical next step when the value of land and associated forest assets are not represented by yearly data. Due to public demand to address issues of wellbeing provided by the natural environment a good starting point would be the value of assets based on their direct uses. For many countries in Europe, such accounting does not take place, so even the basic data on the economic value of forest assets does not exist, unless individually estimated. While forests might provide non-market public goods that add to provision of goods and services provided and their value as assets as well as rural employment. The value of diverse ecosystems, rural development and recreation are all current topics of study (Edwards et al., 2011; Elands and Wiersum, 2001; Ring et al., 2010), and in Austria it was previously hypothesized that recreation could plausibly (at a willingness to pay of €5 per visit) have an annual value in the order of the GVA of forestry (Sekot, 2007). However, what is not made clear is the extent and economic value of the assets that provide these values, which are not accounted for regularly. Meaning that when data are required to inform policy at a frequency greater than national inventories they are estimated, without guarantees that the considerations and concerns voiced at meetings such as the Forestry Statistics Working Groups are taken into account.

In terms of the immediate use of such statistics examples of political will running ahead of the state of forest accounting already exist. Land values are to be estimated from September 2014 and this includes forest land. Furthermore carbon stocks have been long since valued using definitions that are not harmonised with those statistics transmitted for the TBFRA and the SoEF report. Inconsistent international definitions were stated at the interview at the LM to be undesirable. One proposed function of the IEEAF is to explain these figures in a central format. Furthermore, at the forestry statistics working group in 2012 AT stated *"definitions are one*

thing, but what is reported is what is available." which would truly support the proposal to collect data and address problems such as differences between FAO held data on forest extent and forest extent calculated by the LUCAS, applying FAO definitions to remote sensing data. Regarding the periodical nature of NFI's this need not be a problem, in that IEEAF data could always be treated with the scepticism of estimates. The question is if such estimates are an improvement on data that are estimated to fulfil legal obligations like the Kyoto Protocol through LULUCF and the new ESA requirements on land values, and European Environmental Account modules. The IEEAF in this respect might aim to provide a more satisfactory means of presenting consistent data, an opportunity that should be assessed.

Conclusion

The IEEAF has regularly collated the GVA of forestry for a majority of EU and EFTA states since 2005 with an expected lag of about two years. The remaining tables contain space for forest asset information that have been produced regularly by France, Germany and Slovakia. Additionally, the tables can in principle be used to cover LULUCF reporting requirements as declared by Germany. However, participation in tables other than 3c remains intermittent with only Bulgaria and Greece providing tables in more than two consecutive years. Additionally, the aggregated numbers of participants each year for tables other than 3c have not risen in the period 2005 to 2011.

While some countries have cited the potential of the accounts to consolidate reporting requirements, other nations refer to the additional work required and the uncertainty related to estimates. Additionally, nations question the value of estimating volume of standing timber on an annual basis, which are in many cases required for estimating the value of standing timber assets and forest land. However, it appears that such items will be valued through other European institutions due to recent developments in European Law. These estimations need not necessarily pay regard to the discussions of the Forestry statistics working group. Eurostat has also recently pointed out that official international statistics are not necessarily harmonised. For these reasons it seems likely that if participation increases the IEEAF will aim to serve the roles of addressing harmonisation where it is lacking and providing EA data.

Due to increasing legal requirements in the EU for environmental data an opportunity exists to increase participation in providing asset information through tables 1 and 2. The accounts do not define a valuation method for standing timber meaning that while other statistics might produce estimates that include IEEAF items due to having a legal basis, the concerns expressed by Sekot (2007) have not been addressed. As long as the methodology remains unclear it seems that the significance of such accounts, and the meaning of providing data on a voluntary basis remains in doubt. While the submission of such data remains voluntary a good indicator of the quality and compatibility of such statistics is the rate of participation in the associated institution.

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Verzeichnis Anhang

Das Verzeichnis für den Anhang muss manuell erstellt werden, da Word Anhangverzeichnisse nicht erstellen kann.

Annex and Emails

Annex 1: Countries for which there is data available compared to those countries which stated in 2010 that they valued NAI.

1: Y = figure available, N = no figure available, N/A = not listed. 2: Y = NAI valued, N = NAI not valued, - = no answer given, N/A = not listed.

Nation	IEEAF NAI Data Available[1]	NAI Valued[2]
Austria	Y	Y
Bulgaria	Y	N
Cyprus	Y	Y
Czech Republic	Y	Y
Finland	Y	Y
France	Y	Y
Germany	Y	Y
Greece	N	N
Hungary	N	Y
Italy	N	N
Latvia	Y	Y
Lithuania	N	N
Luxembourg	N/A	-
Malta	N	N/A
Netherlands	N	Y
Norway	Y	Y
Poland	N	Y
Portugal	Y	Y
Romania	Y	Y
Slovakia	Y	Y
Slovenia	Y	Y
Spain	N	-
Sweden	Y	Y
Switzerland	Y	N
United Kingdom	Y	Y

Annex 2: Document received form Eurostat: "Overview_who provides what_06MAR2013"
Results of Levent Alpar's work as of July 2011, amended with the status as of February 2013:

Table 1. Availability of IEEAF Tables other than 3c

Member States	IEEAF Tables											
	1A	1B	2A	2B	2C	3A	4A	4B	5A	5B	F1	F2
Bulgaria												
2005	X		X		X						X	
2006	X		X	X	X						X	
2007	X		X	X	X						X	
2008	X		X	X	X						X	
2009 & 2010	X	X	X	X	X						X	X
Cyprus												
2000						X	X					
Denmark												
2005	X		X								X	X
Estonia												
1999	X	X	X	X	X	X	X	X	X	X	X	X
Finland												
2005	X	X	X	X		X	X	X	X	X	X	
France												
2000	X	X	X	X	X	X	X	X	X	X	X	X
2001	X	X	X	X	X	X	X	X	X	X	X	X
2002	X	X	X	X	X	X	X	X	X	X	X	X
2003	X	X	X	X	X	X	X	X	X	X	X	X
2004	X	X	X	X	X	X	X	X	X	X	X	X
2005	X	X	X	X	X	X	X	X	X	X	X	X
2006	X	X	X	X	X	X	X	X	X	X	X	X
2007	X	X	X	X	X	X						
2008	X	X	X	X	X	X						
2009 & 2010	X	X	X	X	X	X						

Member States	IEEAF Tables											
	1A	1B	2A	2B	2C	3A	4A	4B	5A	5B	F1	F2
2011					X							
Germany												
2005	X		X	X			X	X	X	X	X	X
2006	X		X		X		X	X			X	X
2007				X			X	X	X	X		
2008	X		X	X			X	X	X	X	X	X
2009	X		X				X	X	X	X	X	X
2010	X		X	X	X		X	X	X	X	X	X
2011	X		X		X		X	X			X	X
Greece												
2000	X											
2001	X											
2002	X											
2003	X											
2004	X											
2005	X											
2006	X											
2007	X											
2008	X											
2009 &2010	X											
Hungary												
2000	X	X	X	X	X	X	X	X	X	X	X	X
2005	X	X	X	X	X	X	X	X	X	X	X	X
Latvia												
2003	X	X	X	X	X	X	X	X	X	X		
Lithuania												
2005	X		X				X	X				
2006	X		X				X	X				
Norway												
2009	X		X	X	X	X	X	X	X	X		
2010	X		X	X	X	X	X	X	X	X		

Member States	IEEAF Tables											
	1A	1B	2A	2B	2C	3A	4A	4B	5A	5B	F1	F2
Poland												
2005	X		X				X	X	X	X		
2008	X		X				X	X	X	X		
Slovakia												
2005	X	X	X	X	X	X	X	X	X	X	X	X
2006	X	X	X	X	X	X	X	X	X	X	X	X
2007	X	X	X	X	X	X	X	X	X	X	X	X
2008	X	X	X	X	X	X	X	X	X	X	X	X
2009	X	X	X	X	X	X	X	X	X	X	X	X
2010 & 2011	X	X	X	X	X	X	X	X	X	X	X	X

Annex 3: Transcript of the interview held at the Lebensministerium with Johannes Hangler. The preprepared questions and preparatory work are detailed in Email 10.

Interviewer	Mark Hedley
Interviewee	Johannes Hangler
interviewee organisation	Lebensministerium
Date of interview	3 May 2013
Date of Transcription	4 May 2013
Transcription by	Mark Hedley

MH: This is the start the first few questions. Given that there is no legal basis for completing IEEAF what conditions would lead to funding for collecting data for these activities?

JH: I would say that a legal basis, then we have to do it. Without a legal basis there should at least be some good reasons for doing something and the reasons at the moment are not enough to fight on additional resources.

Nowadays there is not enough money to do all things so we have to prioritise so as long as participation is as it is now I see no chance to find money in the ministry. And Statistics Austria I think they don't do anything about additional financing by any ministry.

MH: In the response to the 2012 questionnaire response to Eurostat there were some efforts mentioned to harmonise national inventories across Europe and I would like it if you could tell me about these efforts.

JH: The efforts as far as I know are, the trying to harmonise not the inventories themselves but trying to harmonise the results. And, its mainly done by, within the framework of, an EU project ENFIN [European National Forest Inventory Network] of its members are the national forest inventories. In Austria its Klemens Schadauer, he is the speaker of this network. And of course there is interest to harmonise we are able to compare the results but as it is already in the name they are national forest inventories. And the main focus is in the national interest. And concerning the European union there is no need for forest policy.

MH: And then finally about the IEEAF could it be theoretically useful to have this data for comparison of forest assets, would it be internally useful? Or do you see the use of IEEAF strictly lying with pan European organisations such as Eurostat?

JH: There are several other assessments enquiries. The main on the global level is the global forest resource assessment done by or coordinated by the FAO. At the European level its Forest Europe together with the UN ECE FAO, the secretariat at Geneva, there are assessments normally every 5 years and they deliver a good basis for comparing how sustainable forest management is done in Europe. There's now work ongoing now to better use these data from the state of Europe's forests to assess on the national level the sustainability or the grade of sustainability of forest management. I'm not sure if there is a need for additional enquiry like the IEEAF. And the European union has no mandate for assessing forestry measures, that's why there is no common policy. And I think there is no need for annual assessment on these things on development on changes in the forest.

MH: And then so you don't see not having asset data available for communication with other policy makers and say the public and media. You don't see that as an issue?

JH: There are data available but not on an annual basis and I think it is not a big problem. And another problem I see is there really the right or expertise available in Eurostat to handle carefully such data. I have my doubts on this.

MH: So you don't think, no, we'll leave that question and move on.

JH: So all these speculations based on national forest inventories all these data are not easy to handle. There is a need for experience for knowledge about the systems behind and you have to know whats behind. Its fine to have definitions but normally no data are 100pc in line with this definitions.

MH: OK, yes. Yeah, it would be unusual to have 2 people working separately to come up with a definition that describes exactly the same thing.

JH: And there is expertise in Rome FAO and in Geneva they are doing this job since many many years and yes and now-a-days, in Eurostat, there is not enough of these expertise to handle these data in a serious way.

MH: So I wanted to move on to Austrian statistical structures briefly and I was wondering if - I know for instance some other countries have projects valuing the natural environment and positive externalities to do with the forest sector. And, I was wondering if the Lebensministerium or any other organisations in Austria conduct valuation studies for non economic functions of forests.

JH: I'm not sure I have the right available knowledge on all projects in this field of course there is a valuation for economic things and there are systems on the over basis I think from the UN and also on the European level and maybe from the OECD but im not sure. But I'm not directly involved in the valuation of these economic social aims. I'm sure there were at least some pilot studies on this valuation. But I can't give you now an update on this.

MH: OK, no no thats absolutely fine

So perhaps the one externality that I would like to ask about thats not included in the IEEAF tables is the question of over mature timber. And which obviously once timber is over mature its no longer gathering value in an economic sense so do you have a plan to address this issue of over mature timber being considered economically productive? In a sort of Austrian forest accounts.

MH: I think there are different prices for the diameters and if they are too big the prices are maybe less than for medium diameters so it should be in the valuation if you calculate standing timber and multiply it by possible prices for timber catagories.

MH: Ah yes these next questions are about statistical which is perhaps more sensible to ask statistic Austria

JH: Which question

MH: I should have numbered them shouldn't I, probably better to ask someone in STAT about categorisation. I understand this response letter was a collaboration between organisations. Since it seems to deal with some; statistical, and some forest data expertise.

The only other thing I really wanted to clear up was about Austria's current international statistical obligations and Id like either to talk about it informally today and at a later date fix a definitive list so I know I haven't missed anything. So what are the current statistical obligations that Austria has to fulfil?

JH: I'm not a legal expert. But we are a member of different international organisations. A member of the FAO of the UN ECE of Forest Europe we are a member of the OECD we are a member of ITTO so there are different international organisations based on different international agreements and as a member of such organisations I think we have some obligations to work together. and I think all of these organisations have work programmes they are normally fixed in discussions with the members for example in geneva an integrated work programme and its between the UNECE former timber committee now forest and forest industry, and FAO, and the European forest commission, they meet every two years together and every 4 years there is a position on the integrated work programme for the next 4 years and in this work programme there are many different paths but one of these is also for example working on assessments, and enquiries, and data analysing, and the global coordination is mainly done by, I would say FAO, via the Forest Resource Assessment and via the JFSQ. The joint forest sector questionnaire is done in cooperation with all relevant interested international organisations UN, FAO, ITTO, UN ECE, Eurostat, and some years ago there was also OECD on board, but now I think not any longer. So as a member of these organisations, I think, I feel an obligation to do it. Maybe there is no legal act done but the fact its an obligation you a member and its active work on the programmes of these organisations and give input

MH: Yes of course otherwise there is no point in being a member.

JH: Eurostat is part of this international system concerning the joint forest sector questionnaire they are so actually all EU member states and all after states send the

questionnaire first, send it to Eurostat and Eurostat make an evaluation and check off this data and they will try to find additional data if there lacks and then then they send it on via Geneva and in the end to Rome. And all the international organisations use these data for their own analysis and store them on their own databases. But at the end the main database is in Rome and its the main database where all the nations world wide send their data.

MH: I think that's the sort of area that I should focus on with this trying to understand how organisations across Europe collect and report forest data would be to focus on these structures.

JH: The mandate of these organisations is coming from the member states through their work programme and there normally are inter sessional meetings and expert groups and they give advice to the international organisations to the secretary and the secretariat in Geneva and the FAO in Rome how they should do it and its always the experts that come together

MH: So its a more collaborative effort?

JH: Yes of course

MH: And I guess that there must be quite a lot of value in all of this

In both directions yes

MH: OK

JH: There are limited resources; there should be one main coordinator globally. Thats FAO and maybe some sub-coordinators in the regions: north America, Europe, and in the case of forest Europe its the continent Europe, but there shouldn't be too many different systems working on the same area and one of the very good examples of the good practice is the JFSQ, I think. Because this questionnaire ensures that the same data is only asked once and participating organisations are sharing the same data. I can remember 20 years ago there were different questionnaires from this organisation and that organisation and maybe the little differences in their definitions and maybe different forest national correspondents and at the end we had many different figures that may cause different answers and may use different reference years and in the end you have different data sets somewhere at the international level and that's not good because its not efficient concerning resource use, and its not good if you have different figures around the world saying different things about.... pause

MH: Saying different things about the same physical property?

JH: Yes

MH: So you would say that it is better to have a single organisational structure with input from the experts who are members trying to improve it, than to try and persue using two or three different types of organisation's structures and then afterwards try and choose the one that has been most useful? You think it is better to stick to one and get that right?

JH: Yes

MH: Ok good

JH: Because you know its not only filling in there are so many meetings for example next week I am a whole week in Thailand for the national correspondents meeting for the global Forest Resource Assessment 2015. So its starting the assessment so there is much effort in such assessments and then I have to coordinate the filling in of this. Huge questionnaires. And in Geneva we are coming together to make sure the questionnaires from a global level and from the regional level fits together as much as possible. So we are trying to get closer with this. Same reference years, same reporting years, 1990, 2000, 2005, 2010, 2015. And now is the first time we assess it also in the same year.

MH: OK well I guess this is a sort of self motivated thing from your point of view?

JH: yes

MH: you want to meet as may obligations as accurately as possible with as few resources as possible..

JH: there is a much greater need on forest data so there are requirements for other tables but the main core data should be as similar as possible. Sometimes its not possible of course there is always a history there is always a need to compare assessments before. That is a reason for not harmonising the national forest inventories themselves to just harmonise the results because the main need for doing these exercisers these national forest inventories are national questions. We have not an European forest act we have national forest acts or in some countries sub-national forest acts

MH: So you would say that there was more value in these sort of temporal comparisons, than comparisons back in time.

JH: That's very very important because we try to find out the changes in time its much more important. Because in the end we have to answer if we are sustainable or not. And if we are in the right direction and if not we have to change our system or our framework, our legal framework or our subsidy framework sometimes we have to change our education when we find out thinking are not right.

MH: With the IEEAF the position is pretty clear.

JH: Yeah this is written and available, that was a letter from statistics Austria to Eurostat and you have that. I think Walter Sekot and was coordinated between the ministry and STAT.

MH: And then the next thing to write about is what is of interest and what you do do. From my point of view the international obligations and the FAO Forest Europe, ITTO and UNECE are important because you're members and you would contribute to organisations to which you are members. and internally the most, and with any forest statistic, the most important comparisons are making sure that you can compare different time series rather than make comparisons between nations. And thats why forest inventory harmonisation isn't harmanisation of inventories but harmonisation of results. Is there an organisation responsible for this harmonisation?

JH: The efforts were done mainly from the national forest inventories themselves via this group

MH: Ah! So its a phenomina thats occurring because of..

JH: Yeah its a bottom up, but of course there are different needs for harmonised results

MH: Its a result of various reporting obligations.

JH: But it is not easy to start such a process from the top down because it doesn't work. Its a good thing that it is bottom up so the real experts the persons responsible for national forest inventories are coming together and there is no obligation it is voluntary it is financed I think by COST and I think it is very important to find out the common things and to find the best common definitions but then we have to adjust the national data to this agreed international definitions. Not always we adjust every national data if its maybe the same or good enough then sometimes its not necessary to put much effort in adjusting everything.

MH: So to decide weather the benefit justifies the work that has to be done?

JH: Yes, but in many times it is creating a new figure.

MH: Are there any problems with reporting for the State of Europe's Forests

JH: Yes there are many things that we cannot give them, or we have to adjust that is the reason for there being so many comments.

So when you report for the State of Europes Forests in every case you don't have data for every situation, so deciding weather you have substitute data is that a process you conduct internally and then you tell the UNECE, yup this data is good

When you look to a country reports there are many comments on individual figures; what was the original source how was it adapted, what are the differences in the definitions and so on. So thats the reason why country reports are so big and if you really want to compare figures from different countries then you have to look inside these national reports.

MH: OK so you could compare to countries at a time...

JH: I know in the end in the report there is always one table with many countries but if you really want to compare it then you have to go deeper. Because everything in one table is not

really comparable. There is no other way to do it because i don't think it would be wise to make one European inventory system because the nature and our forests are very different, the history is very different. Of course some people would like to have such a European system but is there really a need for such an exercise? And such inventory systems are not cheap.

MH: I suppose one of the majpor reasons collecting such detailed or comparible data isn't justified is because in Europe we have a fairly strong history of guaranteed management practices so once you have national laws in place to ensure sustainable for management then you're less concerned with the results because you know more or less over a long period of time that forest growth is positive there is no need to estimate it every year.

JH: And of course there is the motivation of the forest owners. And we have to ensure that there is the motivation of the forest owners to manage sustainable.

MH: So the purpose of the NFI is to look for trends

JH: Yes the purpose of the NFI is to make sure that our framework is OK. So we have to argue and to prove and to show the public that we are in the right way

MH: And you don't think this communication would be improved by yearly reporting?

JH: No. So it is enough that every five to ten years we have new data but they should be good quality.

END

Notes on remaining time:

Forest act 1852 until 1975

Sample plot inventory was stated in 1960 and before based on individual stands

Over mature timer is unlikely to be a problem in all countries as many have shorter rotation periods

Annex 4: Pre-prepared questions for the interview at Statistik Austria

Questions carried over from the Lebensministerium interview on the 3rd of May:

(numbers in brackets refer to the question list sent to Lebensministerium)

1. Given that there is no legal basis for completing IEEAF what conditions would need to be met in order for the work to be funded? (1)
2. Are there externalities envisaged that would not be covered by the current IEEAF tables? (7)
3. Is there a plan to address the issue of over mature timber not being economically productive? (8)
4. What are the differences between EUSTAT definitions used in IEEAF and the definitions used by STAT when categorising flows and assets that might be included in IEEAF? (9)
5. How much extra time does it take to complete 3C in addition to the SNA? (10)
6. What are Austria's current international statistical obligations regarding forests and the forest industry; accounts, physical data? (11)
7. What LULUCF items are missing from IEEAF and would the IEEAF table on CO_2 (f) be useful if all items were covered? (12)

New Questions (with topics given referring to the initial request for an interview with STAT):

Current international statistical obligations

8. What current obligations demand data

The nature of the agreement for completing IEEAF

9. What are the reasons for completing 3c

Scenario under which the IEEAF would be completed

10. If there were a proposed internal use for IEEAF tabled could they be funded internally

Possible use of such an asset account within Austria

11. Are there any national level attempts to value non-market goods that demand statistics from STAT?

The motivation for completing IEEAF

12. How is current physical forestry data compared with the economic performance of the forestry sector

Data availability

13. what forestry data is available on a yearly basis

Time/costs concerns

14. How much time/effort is currently required to complete 3c
15. Could tables F theoretically be filled out using LULUCF data
16. For example, how much time/effort would it take to fill out tables F with LULUCF data? (this is not expected to be answered in terms of units but will probably be relative to the time it takes to complete 3c)

Interpolating missing vales

17. How would yearly estimates be produced/modelled

Statistics already available that cover internal uses

18. How is the State of Europe's Forests report used internally (although, I think this question might have limited relevance)

Annex 5: Interview at Statistik Austria, Answers to preprepared questions:

Interviewer	Mark Hedley
Interviewee	Matthias Schermaier
interviewee organisation	Statistik Austria
Date of interview	13 June 2013
Date of Transcription	4 May 2013
Transcription by	None, answers to questions received by email after the interview

Questions by Mark Hedley:

Given that there is no legal basis for completing IEEAF what conditions would need to be met in order for the work to be funded?

First, we would like to say, that Statistics Austria is an independent and non-profit-making federal institution under public law whose responsibilities are laid down in the Federal Statistics Act. The statistics compiled by our institution are decreed by international legal acts of the European Community, by federal laws and by regulations.

Other statistics required under international agreements may be compiled on behalf of the Federal Government, the provinces and local authorities, other public law legal personalities and for non-profit undertakings established by federal law to perform tasks that are in the general interest for bodies of the European Union and of international organisations.

See also Internet Homepage of Statistic Austria:

http://www.statistik.at/web_en/about_us/responsibilities_and_principles/statistics_act/index.html

Concerning the different modules of the economic accounts for forestry (EAF) this means:

1. EAF-Austrian Level: The Economic Accounts for Forestry (EAF, Austrian Level) are calculated on the legal basis of the Federal Act on Federal Statistics (Federal Statistics Act 2000) no. 163/1999, as amended; „Bundesstatistikgesetz 2000 idgF).

2. EAF-Nuts II Level: In Austria also regional EAF-data (at Nuts II level) are calculated. The Regional Economic Accounts for Forestry are compiled on behalf of the Federal Ministry of Agriculture, Forestry, Environment & Water Management (BMLFUW) and the provincial governments on the basis of a contract (for Output Data please see also: Web-Page of Statistics Austria, English version).

3. IEEAF-Tables: There is no legal basis for the IEEAF-tables. The tables are currently not compiled. The only exception is table 3c which is sent to Eurostat as the data can, with some effort, be derived from the EAF-data and the forestry bridge tables calculated for national accounts. The compilation of the other IEEAF-tables would have to be funded by the BMLFUW (irrespective of whether there is a legal basis or not).

Concerning compiling statistics within the European Union we would like to mention the "European Statistics Code of Practice" which is based on 15 principles covering the institutional environment, the statistical production processes and the output of statistics.

We would also like to refer to the regulation on European environmental economic accounts (Regulation (EU) No 691/2011), which establishes a common framework for the collection, compilation, transmission and evaluation of European environmental economic accounts.

According to this regulation three modules of the environmental economic accounts are already codified in law, namely:

1. the air emissions accounts,
2. the environmentally related taxes and
3. the module for economy-wide material flow accounts.

The regulation also sets the foundation for further development of additional modules, with a view to adding them to this statistical law in the future. Among other modules forest accounts are mentioned in this context.

How much extra time does it take to complete 3C in addition to the SNA?

The majority of data for filling in table 3c can be taken from the Austrian EAF and the forestry bridge tables compiled for the national accounts. For a few positions extra calculations are necessary.

Of course the compilation and transmission of table 3c involves a certain effort, among other things because in case of revisions the whole time series has to be updated.

What are Austria's current international statistical obligations regarding forests and the forest industry; accounts, physical data?

The following statistics of STAT include, among others, also forestry data (there is no claim for completeness):

1. Farm Structure Survey (FSS; the FSS covers also forestry data like data on forest area BUT: the data transmitted to Eurostat excludes pure forest enterprises - differences between national and EU data for Austria)

2. FAO-questionnaire on land use and irrigation (forest area, other wooded land these two positions are requested from the BMLFUW)Material Flow Accounts (see: http://www.statistik.at/web_en/statistics/energy_environment/environment/index.html) – for this calculation the wood felling report of the BMLUFW is used

3. Energy balances for Austria as of 1970 (see:http://www.statistik.at/web_en/statistics/energy_environment/index.html)

4. Statistics on agricultural and forestry producer prices (not transmitted to Eurostat or other international bodies)

5. Apart from IEEAF-Table 3c, international statistical obligations regarding Forestry are mainly carried out through the BMLFUW or other institutions like the Austrian Federal Forest Office (BFW).

How is current physical forestry data compared with the economic performance of the forestry sector?

Part of the physical forestry data (like the amounts of felling) are used for the calculation of the EAF and IEEAF 3c. Of course we also have a look at other physical data like forest area, etc (e.g. for plausibility checks). More extensive analysis is however not conducted as it would have to be funded by external bodies. Possibly the University of Agricultural Sciences has done work in this area.

What forestry data is [sic] **available on a yearly basis?**

A large proportion of the forestry data used for compiling the EAF is available on a yearly basis. For example:

a. Wood felling report (Holzeinschlagsmeldung; HEM)

b. Timber prices (Statistics on agricultural and forestry producer prices)

c. Price indices like the Agricultural Price Indices and the Consumer Price Index

d. Number and prices of forest plants (calculated separately for softwood and hardwood)

e. Economic data of Austrian forest accountancy networks

Small scale farm forests (<200/500 ha)

Enterprises > 500 ha

f. Data on subsidies for forestry (Green Report of the BMLFUW)

g. External trade balance of forest plants

h. Area of forest gardens, Production of Forest Plants in forest gardens

i. Reimburse of mineral oil tax (expired in the year 2012)

j. Economic data of the Austrian Federal Forestry Office

k. Data concerning plant protection and pesticides

Annex 6: Minutes taken by Mark Hedley at the 2013 Task Force on IEEAF
Notes on IEEAF Task Force 13/14 November 2013

Abbreviations:

Abbreviation	Name	Abbreviation	Name
UNECE	United Nations Economic Commission for Europe	EuS	Eurostat
UK	United Kingdom of Great Britain and Northern Ireland	PT	Portugal
SE	Sweden	FR	France
ES	Spain	PL	Poland
PT	Portugal	DE	Germany

Colours:

Colour	Meaning	Colour	Meaning
Italics	Researcher Input	**Bold**	National comment/Country code
Underlined	Topic		

Chaired by Rainer Muthmann:

1. chair of this unit until the end of the year
2. final meeting for him
3. Likes these groups because they can propose concrete solutions

Spoken agenda:

1. Problems with definitions and nomenclature
2. efficient use scoreboard at the unit level
3. discuss what is interesting from a statistical point of view
4. what is possible at the policy level

Addenda

1. What information submission are possible using currently available data

UNECE: Who will take care of fuel crops? Agriculture or forestry?

Annex a: Task force docs: shows the decision on NACE – it says that the growing of trees is always forestry.

Topic: LULUCF

EuS: IEEAF does not need to stick to this rule

UK: Uses LULUCF for LULUCF only as there other (more up to date) definitions for other forest statistics

PT: Statistician present – responsible for statistics and forest inventory people are responsible for LULUCF reporting. *Therefore filling this data in would require consultation and extra work.*

Cork Oak forests do not produce cork every year so while the main income over 10 years comes from cork in individual years other products may provide the main source of income.

SE: Many data organisations in Sweden meet once per year to discuss LULUCF. FAO definitions cannot be used as a standard for LULUCF reporting. However, the data that many countries submit as LULUCF figures use FAO definitions as a basis.

SE: We have opening and closing stocks

EuS: IEEAF might fill the function of providing verification data for LULUCF data outside of the FAO database.

Wood for personal use remains an unknown

SE: 1a and 1b are too ambiguous and it is not clear what is to be collected.

DE: Highway fringes – wood extraction is not counted on these areas in DE

EuS: JFSQ should capture all land but Marillise is certain that they are not getting information on everything

Topic: Available for Wood Supply

"'cultivated timber' has many critics as on the one hand it is not clear but on the other accounting should deal with human production and not natural production" - EuS

EuS: because sample plots are fixed there might be an issue of natural expansion not being captured with old plots

DE: DE complete revisions of sample plots prior to NFI so that new area is captured

PT: There is a problem with defining agricultural production in forests

1) Spain and Portugal want to know how to treat cork and meat production

EuS: SEEA did a questionnaire of IEEAF participants – participants still had a problem with "cultivated forests"

UK: Cultivated and Available for Wood Supply are fairly meaning less as there is no primary forest and all forest land is theoretically available for wood supply

legal requirement for intervention in AT after clear cutting, the scale of human intervention is not a binary criteria (i.e. cultivated or not), even 'natural' regeneration implies opportunity costs or management of some sort.

DE: differentiates between productive and non-productive area (roads, yards)

UNECE: Forest area should be reported including roads

Available for Wood Supply refers to things such as reserve forests (forests held in reserve but that are theoretically harvest-able) in Russia.

UK: national parks – nature reserves, still have some extraction

Pilot studies on 'available for wood supply' are available on CIRCABC

Natural disasters also require removal

Topic: Describing Forests

PL: Forest is a legal definition not a physical one that belongs to the land and not the attributes of the land cover

What land uses might be erroneously captured by aerial inventories and marked as forest when in fact they are "agri activities"?

1) *Christmas trees – short rotation forestry (not defined as forest by FAO standards h = <5m*
2) *Short rotation coppicing*
3) *These are both dependent on definitions. FAO describes forest as having tree h of >5m and 7 countries >2m. However, this might be misleading due to the harvesting and succession cycle.*
4) *poplar plantations are not considered a forestry activity in Italy (IT)*

UK: *text deleted, comment incomplete and therefore misleading*

Topic: 1a: Do we keep forest and other wooded land?

And, within 'Forests' do we keep 'available and not available for wood supply'

UK: "we cant at the moment determine 'other wooded land'" - preference would be to remove available and not: difficult to make a stable definition and therefore not seen to be meaningful over time: *echoes SE's comments on subjectivity*

DE: Other wooded land should not be dropped

1) people are used to it
2) in southern countries it is likely still a useful descriptor

Available and not: definition is not operable as it is too loose – MCPFE (Millennium Convention on the Protection of Forests in Europe) would perhaps be more useful. *Not sure what he means... how – find out?*

SE: can only make a subjective assessment on "availability for wood supply.

Topic: recovery of wood from disturbances

SE: amount of wood recovered depends on recovery speed

DE: Storage after storm events means that the entire harvest does not go to processing but is stored and might be lost as production in the current year and carried forwards to be processed and sold in later years.

Topic: Afternoon discussion on the proposed 1a table

Description of the proposed table...

UK: Seems overly complex, not possible to completely fill in and wonders over the use and interpretation and that if members do not provide information for certain parts might be misrepresented as not being interested or aware of these topics

covering LULUCF is not necessary

EuS: one use of LULUCF data is to provide verification for other details of LULUCF data

ES: SRC is not included in the Spanish forest inventory

DE: concern of systematic over estimates such as form factors – felled trees are treated as cylinders in Germany

storage of logs may cause inconsistencies in later years and the current year.

"losses due to natural causes" being included in 1a does not make sense because forest area is rarely "lost" in this way

UK: many "natural losses" are not recorded

FR: *(off topic, must be referring to 2a)* France would rather report fellings than removals for data availability reasons

ES: only have information on "forest", not, "other wooded land". *This seems contrary to DE's comments that perhaps "other wooded land" would be useful for southern states. This is also not likely to be a definition issue because, in annex V of the decision on accounting rules foe land use Spain defines forest with a crown cover of 20pc: the most*

common constraint from this list. So, Spain defines "forest" in a similar way to many other EU nations and has a stricter criteria for crown cover than the FAO. Portugal uses the FAO definition of forest (crown cover 10pc) with the exception of area which they require 1ha as opposed to 0.5.

SE: *(off topic, this comment seems to also be referring to 2a)* Gross increment not available yearly *(not sure about this as it appears that net increment and mortality are supplied so that GI could be estimated)*

fellings are available yearly

worried about contradictions – if the increments and assumed opening and closing stocks diverge from the inventory statistics this would be a problem

Discussion on available and not available for wood supply 1a (morning of the 14th)

DE: "definition of AWS is very vague"

EuS: "needs to be"

n.b. Grazing was removed from 1a early in the morning

UNECE: The reason for having NAWS and AWS is that it is important to differentiate between areas of high and low utilisation. So that the wood use is not assumed to be consistent across the whole wooded area in a nation. Uses specific example of Russia to make his point.

SE: "this is called unproductive forest in Sweden"

UNECE: Area availability was dropped by the FAO because in developing countries "volume available for wood supply" is a more useful indicator.

Its a useful indicator for economically productive forest

UK: are we trying to make tables consistent over time or over nations? If UK were to answer honestly then they would say that theoretically everything is available depending on circumstances but this would not be in the spirit of the definition and would therefore not be comparable across nations who decide to use the definition differently.

On the other hand if the person responsible made a subjective assessment on what is available the definition's use would depend on who was doing the job that year and so results would not be temporally comparable either.

DE: Additional LULUCF area should not contribute to the "grand total" as this constitutes double counting. Additional LULUCF area should be included beneath the total as a reporting line only.

ES: Believes that supplying LULUCF data will be too difficult because definitions are different

UK: what is the LULUCF line for? UK believes that its function is to explain the differences between LULUCF reporting and other reporting.

EuS + UNECE: suggests to have additional LULUCF area included under OWL

DE: Suggests again that Add LULUCF area should be included only as a reporting

line and not automatically included in the total

UK: Additional LULUCF area will be negative for the UK because of improved inventories, however LULUCF still uses old data sources. re-reporting LULUCF doesn't seem to make sense as there is no clear gain and the information is already available

ES: NFI area is also larger than LULUCF area so "additional LULUCF area would also be negative.

EuS: looks like additional LULUCF area will go outside of the total as a reporting line and that it might be positive or negative.

SE: Are LULUCF teams aware that they are having a review in 2020?

UNECE: Would it be possible for EuS to pursue a project comparing LULUCF area and IEEAF area to see where the differences exist?

Saw Jabba making a note on the proposed tables, looks likely that Add. LULUCF Area will go outside of the main total

EuS: Rainer: "Strategically, EuS needs to include LULUCF in the IEEAF tables because of this review in 2020. Because statistical and methodological considerations are not considered after the beginning of a political process. Showing the differences between LULUCF and other statistics is a useful exercise. This would draw attention to the differences between LULUCF reporting and other reporting."

SE: Valid point, but don't you think that DG climate (who!?) have a responsibility to deal with those discrepancies?

LULUCF requires national definitions

UK: National definitions are getting closer to each other, but LULUCF is currently stuck with old definitions.

PL: LULUCF should be discussed with the relevant persons in the member countries and believes that the information will be too complex for a single line.

DE: is currently unable to sensibly discuss this.

Main question proposed by ES:

Should "Additional LULUCF area be included under one the 2 main categories in table 1a or should it only be included as a reporting line?

Question to be proposed before the next WG in February.

Changes in 3c necessary due to the proposed changes in 1a and 2.

Would SRC be covered completely by fuel wood?

If SRC is subsidised where would these subsidies be included?

All accounts must be consistent with NACE definitions

EuS, Agri unit: does not believe that including SRC would be double counting.

DE: there might be an issue in Germany where farms with forest activities have the forest included in the NFI but there are only one set of accounts for the enterprise so the income is treated as agriculture.

Notes on the proposed table 2a: n.b "2 and 2a were alternatives in the last proposal but were not treated as such by many member states in their responses"

There was a discussion regarding the table proposed for 2a and weather gross increment should be included. Further more there was some confusion over the meaning of net increment (NI) which would normally be [GI – Mort.] however the proposal was to have NI = GI - Mort. - other natural losses. In the FAO definition NET increment is listed as GI – Natural losses, However the DE representative appears to consider salvage cuts and recovery as removals.

Also DE was very keen to include a column for "storage".

FR: no space in this table for "logging" losses could be included in fellings

FR + DE: logging losses not recorded

DE/UNECE: losses (un-retrieved should be split into) "mortality" and "other natural losses" after that FAO DE disagreed:

1) DE stated that NI is GI – mortality and that "other natural losses was a separate thing".
2) FAO said that NI should be GI - all losses
3) natural losses might refer to losses due to damage (unexpected) and that mortality due to competition (expected, stable) were two different things and that putting them together might mean that you lost information.

4) The final proposition was to add a column to have mortality and other natural losses separately and nations could fill in what was available.

DE: Requested "Other +/-" to deal with storage after natural disasters: wind throw/fire

EuS: to FR, can include logging losses with the fellings

DE: there is a difference between the estimated quantity of wood felled and the wood brought by saw mills and the felled amount is typically over estimated

UNECE: many countries do not have information on gross annual increment

EuS: would like to keep gross as it gives information

Likely that they will include net and allow countries to fill in what they are able to

UK: making the tables more complex reduces the likelihood of voluntary completion

2nd proposal for table 2

UNECE: wants to delete the column for other losses (un-retrieved) and include it in mortality

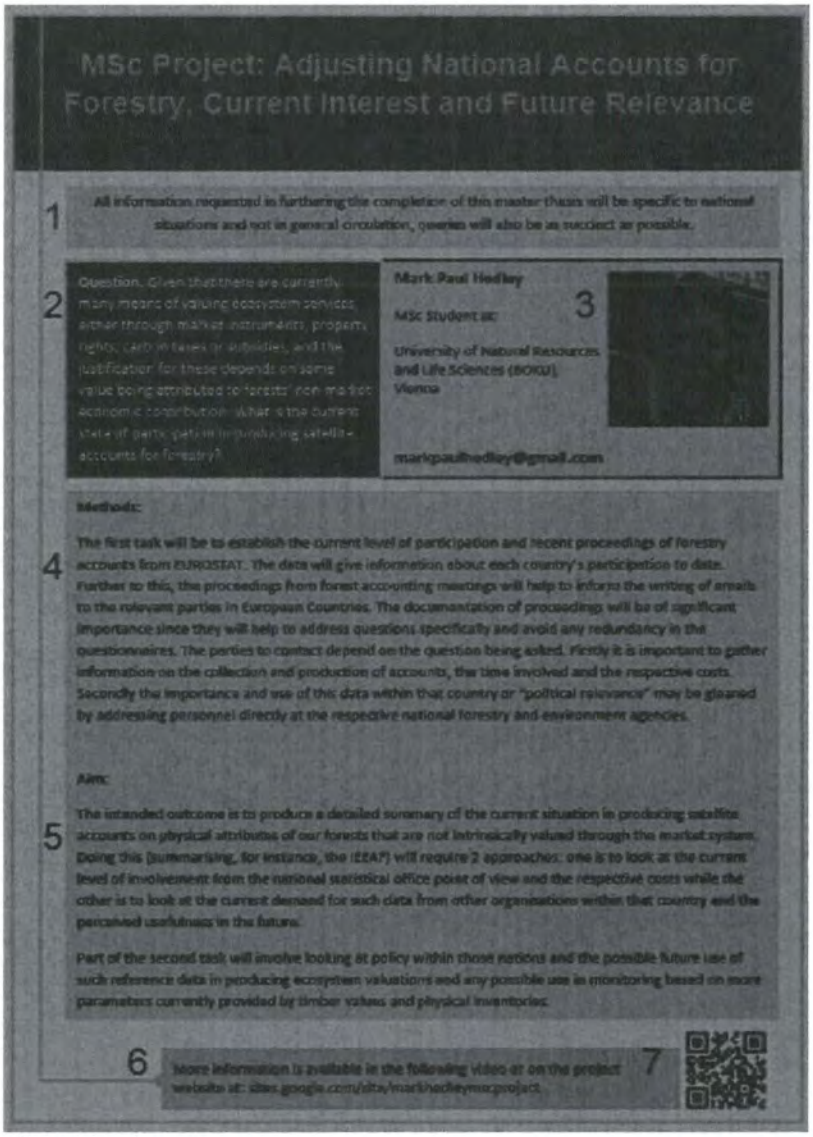
DE: "no, no, no"

EuS: "gross increment" should be changed to "components of increment". Jabba proposes title change to "volume of timber on wooded land" to deal with the addition of a "storage" column

UK: *Not all removals are fellings (find the comment in the responses AT think on the hierarchical level of fellings and removals.*

****End****

Annex 7: Project Handout



1) **Explanation of data use**
2) **Research question**
3) **Researcher details**
4) **Methods used**
5) **Aim of the project and enquiries**
6) **Links to further resources: the project website**
7) **Links to further resources: explanation video**

Emails:

Email 1:

Documentation of Email	
Date:	
06/11/12	
Subject:	**Correspondent:**
Initial Enquiry	Marilise Wolf-Crowther, Rajmund Laczko (Eurostat)
Text:	

Dear [Marilise Wolf-Crowther/ Rajmund Laczko]

I am writing to request data on environmental accounts for forestry to use in completing my master thesis.

The Project aim is to look at, the current interest European and future prospects for producing satellites to the system of national accounts regarding the non market functions of forests. One of the main lines of enquiry is the usefulness (to participating nations) of having a source of consistent reference data.

Eventually the majority of information will come from addressing forest and statistical offices directly; however, my supervisor has suggested that the best place to start would be in understanding the official proceedings that have lead up to the current level of participation. This history and description would constitute an early chapter of the thesis and allow me to sincerely address forest officials within the EU. A synthesis of current concepts and recent developments (e.g. revision of the SEEA) will serve be the starting point for my thesis. After this I will proceed by addressing those countries' statistical schemes devoted to the forest sector, how they are used in policy making and how they are used in further analysis such as valuation studies.

What I am requesting is:

1. A list of national correspondents to address regarding the current interest and reasons for the historical participation for use after the initial case studies.

2. To get access to the CIRCA website where the documents of the various meetings of Forestry Statistics are available.

3. And, possibly a letter of recommendation asking for active participation.

Further to this, I have started creating a website detailing the progress; aims of the project; and further information. I have included a link here. It currently contains a project description; my initial proposal; and some planning documents. The purpose of this is as a communication tool so that when I contact national correspondents they are able to voluntarily investigate the project and decide on it's merit. The whole project will be a learning exercise so that after understanding the current situation I will be able update my knowledge and create meaningful questionnaires.

I wish to explore the possibility of a letter of endorsement from you as I have some concerns about the level of participation.

In conclusion, my request is for access to the current proceedings regarding forestry accounting in Europe and the data already submitted. My supervisor may be contacted at

walter.sekot@boku.ac.at. Finally, I would greatly appreciate any comments or recommendations.

Yours sincerely

Mark Paul Hedley

University of Applied Life Sciences, BOKU, Vienna

Marilise Wolf-Crowther, Fri, Nov 9, 2012 at 10:35 AM
To: markpaulhedley@gmail.com

Hello Mark,

Sounds like an interesting project.

You have access to all our folders and documents on the Eurostat CIRCABC website (new, public access).

I can't forward address lists (protection of personal data), but I can forward your letter to correspondents, asking them to contact you if they want to.

I will look at your link soon.

Best regards

Marilise WOLF-CROWTHER
Forestry and biodiversity statistics

Mark Hedley, Tuesday, November 06, 2012 12:35 PM
To: Marilise Wolf-Crowther

Firstly, thank you very much for getting back to me so quickly. What you suggest is more help than I could have hoped for.

It would not be an exhaustive enquiry; a few questions covering the use/participation so far and likely use in the future. The questions would be nation specific as I am very keen to avoid asking anything generic. So, enquirers would be based on which data have already been submitted with the aim of generating further information about the current use and perceived usefulness. this would be based on professional opinion and the presence of policy derived from accounting information or valuation studies.

Likely topics that I would cover are:

How the information has been/might be produced?
Interest in producing additional information and use in the future?
Are there any examples policy referring or citing environmental accounting information already submitted?
Have any forest valuation studies been?

However, I realise that the biggest hurdle is in participation. I am worried that without participation and additional information the project will just be an elaborate summary of what is already available. With this in mind I am very keen for possible contributors to understand that any questionnaire they are sent will be as specific and concise as possible.

With that in mind I will set to creating a some national profiles over the next weeks and hopefully await some responses from the national correspondents.

Many thanks,
Mark

Rajmund Laczko Mon, Nov 19, 2012 at 10:41 AM
To: markpaulhedley@gmail.com

Dear Mark,

Our annual working group is next Thursday and Friday (29-30 Nov 2012), in Luxemburg. In case you're interested in participating, I can send you a letter of invitation which will grant you access to the meeting.

Best regards
To: Rajmund LACZKO

Mark Hedley, Mon, Nov 19, 2012 at 11:55 AM
Rajmund Laczko

Yes please, that would be extremely useful. I will look into the arrangements today but I am certain that I will attend.

Many thanks
Mark

Rajmund Laczko, Mon, Nov 19, 2012 at 12:27 PM
To: markpaulhedley@gmail.com

Dear Mark,

In the attachment you'll find the invitation and our draft agenda.

Best regards

Rajmund LACZKO

Attached information:	
MHedleypersinv2012.pdf	Working group invitation
FO_2012WG_02_draft_agenda.doc	Draft agenda of the 2012 Working Group

Email 2:

Documentation of Email	
Date:	**Correspondent:**
29/11/12	Ewa Brezeinska (Wood Technology Institute, Poland)
Subject:	
Environmental Forest Accounts	
Text:	

Dear Mark Hedley,

Regarding your request (forwarded to us by Ms Maria Wolf-Crowther), please find below a list of institutions from Poland, which you could contact regarding information for your thesis.

- Poznan University of Life Sciences, Faculty of Forestry
http://en.puls.edu.pl
e-mail: dziekles@up.poznan.pl

- Warsaw University of Life Sciences – SGGW, Faculty of Forestry
http://waw.sggw.pl/?lang=en
e-mail: wl@sggw.pl

- University of Agriculture in Krakow, Faculty of Forestry
http://wl.ur.krakow.pl
e-mail: wles@ar.krakow.pl

- Forest Research Institute
http://ibles.pl
e-mail: IBL@ibles.waw.pl

Best regards
Ewa Brzezinska
Office
Wood Technology Institute

Email 3:

Documentation of Email	
Date:	**Correspondent:**
10/12/2012	Elina Maki-Simola
Subject:	
Follow up request for information from the Eurostat Working Group On forestry Statistics	
Text:	

Dear Elina.

I am writing to you to request direction in who I should speak to in Finland to request information regarding the production of a Finish national profile for my master thesis on the current EU interest in satellite environmental forest accounts (eg, IEEAF).

Hopefully, you remember my explanation of the project from when we spoke at the Working group on forestry statistics. But for clarification I have attached my project summary and a link to the project website. From each of the EU member states I am looking to enquire about environmental forest accounts at the national level. I have broken down the specifics below so that you might be better able to redirect my enquiries and help me to produce a useful outlook on the current situation. I will also be reviewing the CIRCA website so as not to prompt answers that have already been given at previous meetings. The purpose of my thesis project is to collect and put together information on separate member states that is not currently available as an overall outlook.

The 3 areas for which I would like you to provide a national contact are:

Political interest:

Here I would be looking at national policy: what national policies exist that either refer to environmental accounts or, valuation studies. This section would also cover the current national position to the IEEAF however I would summarise the answers already available from previous meetings on CIRCA myself. In this case questions would focus on the situation at the national level.

Scientific Interest:

For this section I would like to contact academics working at the national level within [nation] to ask about scientific work in environmental forest accounting or forest valuation studies. I would also enquire if any studies have been cited in national policy documents.

Statistical difficulties:

The final part would come at a later date after some consultation with Statistics Austria in order to produce some questions about the feasibility of providing the data for existing Environmental Accounting Structures.

Many thanks

Mark Hedley

University of Natural Resources and Life Sciences BOKU Vienna

Reply

Dear Mark,

let's hope this works ok now... I tried to add you as a cc.

Jukka Muukkonen works in Statistics Finland, and he is an expert in accounting, participating London Group etc. I hope he will reply to you soon. But if not, please don't hesitate to remind him, he is a very nice person but may be busy. (See the links below)

All the best!
Elina

From: Elina Mäki-Simola [mailto:elina.maki-simola@metla.fi]
Sent: 10. joulukuuta 2012 10:28
To: 'jukka.muukkonen@stat.fi'
Cc: 'Mark Hedley '
Subject: FW: Follow up request for information from the Eurostat Working Group On forestry Statistics

Dear Jukka,

I think you are the best expert in Finland to consult on accounting issues, especially on IEEAF, so that's why I'm forwarding Mark's message to you. Hopefully you would have the opportunity to help him a bit.

With many thanks and regards,
Elina

To Mark some links:
http://tilastokeskus.fi/til/mettp/index_en.html

http://tilastokeskus.fi/til/mettp/2010/mettp_2010_2011-12-20_tie_001_en.html

Attached information:	
http://tilastokeskus.fi/til/mettp/index_en.html	
http://tilastokeskus.fi/til/mettp/2010/mettp_2010_2011-12-20_tie_001_en.html	

Email 4:

Documentation of Email	
Date:	**Correspondent**
09/12/12	Miroslav Kovalcik (Department of Forestry Policy and Economics National Forest Centre - Forest Research Institute, Slovakia)
Subject:	
Forest Accounting in the EU	
Text:	

Dear Miroslav

I have been passed your contact information by Walter Sekot who is the supervisor of my master thesis project. I'm working trying to make an EU wide picture of the state of environmental accounting. I was wondering if you would be willing to offer some information on the situation in Slovakia so that I can get started on writing my national profiles?

I am also writing to you to request direction as to whom I should speak to in Slovakia to request information regarding 3 areas related to the thesis. I understand the in most cases this would be you but for clarification I have attached my project summary and link to the project website. From each of the EU member states I am looking to enquire about environmental forest accounts at the national level. I have broken down the specifics below so that you might be better able to understand my request and help me to produce a useful summary on the current situation and likely outlook. I will also be reviewing the CIRCA website so as not to prompt answers that have already been given at previous meetings. The purpose of my thesis project is to collect and put together information on separate member states that is not currently available.
The 3 areas for which I would like describe the Slovakian situation are:

Political interest:

Here I would be looking at national policy: what national policies exist that either refer to environmental accounts or, valuation studies. This section would also cover the current national position to the IEEAF however I would summarise the answers already available from previous meetings on CIRCA myself. In this case questions would focus on the situation at the national level.

Scientific Interest:

For this section I would like to contact academics working at the national level within [nation] to ask about scientific work in environmental forest accounting or forest valuation studies. I would also ask if any studies have been cited in national policy documents.

Statistical difficulties:

The final part would come at a later date after some consultation with Statistics Austria in order to produce some questions about the feasibility of providing the data for existing Environmental Accounting Structures.

Many thanks

Mark Hedley

University of Natural Resources and Life Sciences, BOKU, Vienna

Miroslav Kovalčík, Mon, Jan 7, 2013 at 2:53 PM
To: Mark Hedley
Dear Mr. Hedley,

First of all I sorry for writing so late, but I was very busy.
Of course, I help you with pleasure.
I do not understand quite well, you will send me questions related to the 3 areas, you are interested in, or I have to describe the situation in Slovakia (free text) in these 3 areas?
I am waiting for your answer.

Best regards to you and to Prof. Sekot

Miroslav Kovalcik

Mark Hedley, Tue, Jan 22, 2013 at 1:11 PM
To: Miroslav Kovalčík
Dear Miroslav Kovalcik,

Sorry about that I can see now that the query was a little ambiguous. I think it is best to start with some specific queries however please feel free to be lateral in your answers if you have time. The reason I was so tentative with my initial enquiry was that I had some concerns about not receiving responses at all. But I can see that being a little more direct is probably useful.

I have started writing the profile for the United Kingdom which has given me an idea of the general situation. From this initial work I have 3 specific questions regarding the political interest that I hope are relevant. They are:

1) Are there something like environmental accounts for Slovakian forestry at the national level (IE physical descriptions of forest at the national level at a yearly resolution)?
2) Is there a policy plan to produce data for the SEEA?
3) Have there been any national level valuations done by the government for non-market forest functions?

For the scientific interest if there are papers published about environmental accounting in Slovakia then I would very much appreciate being directed to those. However I realise that this might not be the case so answering: "4) Is scientific interest in Slovakia you are aware of" would be of use.

Finally the statistical difficulties are - I imagine - homologous with other countries as I understand the forest industry intuitively lends it's self to such structures as inventories at 5+ year intervals and so providing yearly input data requires either interpolation modeling or expensive data collection. But, that this is the whole story is a general assumption. In my thesis, I would like to cover the specific situations in national profiles and look for patterns later. I would be very happy, if you are able to clear it up and help me to understand the most important difficulties in providing such information on Slovakia. So! 5) What are the most problematic data demands in producing Slovakian data for the IEEAF?

Thank you once again.
Mark Hedley

University of Natural Resources and Life Sciences, BOKU, Vienna

Miroslav Kovalčík, Fri, Jan 25, 2013 at 8:01 AM
To: Mark Hedley

Dear Mark Hedley,

I received your email and I am preparing answers.

Best regards

Miroslav Kovalčík, Thu, Feb 7, 2013 at 10:11 AM
To: Mark Hedley
Dear Mr. Hedley,

I am sending you some comments to your questions.

Forest accounting in Slovakia

1) Are there something like environmental accounts for Slovakian forestry at the national level (IE physical descriptions of forest at the national level at a yearly resolution)?
Yes, we work out every year integrated environmental and economic accounts for forests (IEEAF) at national level and environmental accounts are part of them.
I send you IEEAF for 2011 as attachment.

2) Is there a policy plan to produce data for the SEEA?
Yes, there is. Ministry of environment of Slovak republic and Slovak environmental agency are responsible for SEEA. On Monday 28.01.2013, a working meeting was hold on, SEEA is a priority for the ministry of environment, but without finance, or find money through a project, intention is to use existing data sources. I participated in this session and a working group will be created. So, that is the situation in this area.

3) Have there been any national level valuations done by the government for non-market forest functions?
Essentially we do not valuate the non-market forest functions. In IEEAF, the market production, own final use and net annual increment of standing timber are valuated.
Of course, there are some studies on value of non-market forest function, but in Slovak language. I am sending you link to these papers (abstract is written in English)
http://www.tuzvo.sk/files/3_3/Acta_Facultatis_Forestalis/acta_54_1_2012.pdf
http://www.tuzvo.sk/files/3_3/Acta_Facultatis_Forestalis/acta_52_2_2010_web.pdf

4) Is scientific interest in Slovakia you are aware of" would be of use.
There are a lot of scientific interests in this field, but problem is financing, our ministry of agriculture finances just one research project, now we have a project focused on competitiveness of forestry.
Results of the research could be used for these purposes, but in my opinion, a systematic data collection is missing.

5) What are the most problematic data demands in producing Slovakian data for the IEEAF?
We have quite good system of economic data collection at national level. A file describing the situation in Slovakia is attached. Other data sources are under single tables in IEEAF file, which is attached.
Problematic data demands are data and information on business sector, there are no data. We submitted a research project focused on efficiency of business sector (in collaboration with Technical University in Zvolen) and one part of this project will focus on data collection on business sector.
Other problematic filed is also data on non-market forest function.

So that is very briefly to your questions.

When you will finish the profile for the United Kingdom, I can complete the profile for Slovakia.

Do not hesitate to send me other question.

Best regards
Miroslav Kovalcik

Attached information:	**Details**
Projection methods.docx	Projection methods used
IEEAF 2011 SK.xls	Filled out IEEAF tables for 2011

Email 5:

Documentation of Email	
Date:	**Corespondent:**
10/12/12	Sheila Ward (Forestry Commission, UK)
Subject:	
Request for information regarding forest accounting in the UK	
Text:	
General enquiry sent as per, emails 3 and 4 Mark, As a first step, it might be worth looking at the Natural Environment White paper and the National Ecosystem Assessment - both available fromhttp://www.defra.gov.uk/environment/natural/whitepaper/. This web page also has other links that may be of interest (e.g. Natural Capital Committee). The National Wellbeing programme (see http://www.ons.gov.uk/ons/guide-method/user-guidance/well-being/index.html) includes a strand on natural environment that seems to be covering some of this area too; the Office for National Statistics are currently working on pilot forestry accounts. Hope that helps. Sheila	
Attached information:	**Details:**
http://www.defra.gov.uk/environment/natural/whitepaper/	Natural Environment White paper and the National Ecosystem Assessment - both at this link
http://www.ons.gov.uk/ons/guide-method/user-guidance/well-being/index.html	The National Wellbeing programme

Email 6:

Documentation of Email	
Date:	**Correspondent:**
10/12/12	Surendra Joshi (Swedish Forest Agency, Sweden)
Subject:	
Request for information regarding forest accounting in Sweeden	
Text:	
Dear Mark, I have forwarded your request to Viveka Palm who is one of the experts from Statistics Sweden & involved at the expert level in the IEEAF on the on going SEEA, CREEA,UNCEEA & DIMESA. I will take this opportunity to wish you a Happy Merry Christmas & Happy New Year. I wish all the best in your master thesis & I will be looking forward to your report on this. Med vänlig hälsning Best regards Surendra Joshi	

Email 7:

Documentation of Email	
Date:	**Corespondent:**
17/12/12	Illaria Goio (Italy Foundation for Scientific Research Projects, Italy)
Subject:	
Forest Accounting in Italy	
Text:	

Dear Ilaria Goio,

I have obtained your email address from your 2007 paper "The development of forest accounting in the province of Trento (Italy)"

I am writing to ask about forest accounting in Italy. I am currently completing my master thesis at the University or Natural Resources and Life Sciences (BOKU) in Vienna. The purpose of my project is to gather and summarise with regards to scientific and political interest in environmental forest accounts such as the IEEAF in Europe. I have attached a 1-page summary of the project and there is further information available on the project website.

The main source of contacts for collecting information on the various EU states has been the Eurostat working group on forestry statistics which, I attended this November However, looking at the emails on the last round of comments I noticed that Italy has not recently participated. I would like to ask for some information (policy, scientific work) on the production and use of forest accounts in Italy so that I may write an Italian profile as part of my thesis.

This would be much appreciated and hugely important as there is a high possibility of some some bias in the final report. This would be towards those nations involved and keen to move ahead with IEEAF, I would very much like to avoid this.

Yours sincerely
Mark Paul Hedley

Reply, 7/1/2013

Dear Mark Paul Hedley,

sorry for the delay in answering you and happy new year from Italy.
Unfortunately, I can't help you because I don't have any information that relates forest accounting to Italy as a whole, there are yust some local examples.

Best Regards

Ilaria Goio

Email 8:

Documentation of Email	
Date:	**Correspondent:**
22/01/12	Jukka Muukkonen (Statistics Finland)
Subject:	
Follow up request for information from the Eurostat Working Group On forestry Statistics	
Text:	

Dear Jukka Muukkonen,

I am writing regarding my master thesis looking into measurements of non-market forest functions in Europe and ultimately hope to learn something about the interest across Europe in producing Environmental forest accounts such as the IEEAF. I have been referred by Elina Mäki-Simola who thinks that you are the best person to contact regarding Finnish forest accounts.

Elina mentioned that you are very busy and I believe I sent the last mail just before Christmas which was poorly timed. With this in mind I Thought I would write back, with 3 specific questions, that you could answer quickly. My hope is that your answers keep me busy researching and writing the Finnish chapter of my thesis. My questions are:

Are there something like environmental accounts for Finnish forestry at the national level (IE physical descriptions of forest at the national level at a yearly resolution)?

Is there a policy plan to produce data for the SEEA?

Have there been any (national level) valuations done by Finnish government organisation for non-market forest functions?

I do not require long answers if you are unable to give them just to be pointed in the right direction. One of the major difficulties writing this thesis is overcoming language barriers which make domestic policy difficult to access and your input would be very much appreciated. I am already aware of the scientific paper by Matero dealing with a valuation of externalities related to finish forests and will also pursue enquiries there.
>
Anyway, I hope that my queries are sensible and easy to answer and look forward to your reply.

Yours sincerely
Mark Hedley

Universität für Bodenkultur, Wien
University of Natural Resources and Life Sciences, Vienna

Reply, 28/01/2013

Dear Mark Hedley,

I am very sorry for this slow reaction to questions. I hope that the answers will be at least to some extent usefull to you.

The present forest accounts in Finland are focused on physical flows of wood, as presented in the publication http://tilastokeskus.fi/til/mettp/index_en.html

Statistics Finland also produces annually the table 3c of the IEEAF (an attached excel -table).

Annual physical or monetary asset accounts on forest land and timber are not compiled in Finland. There is no policy plan to produce these accounts for the SEEA. However, physical data on annual growth of timber is used in green house gas calculation for the IPCCC.

The text below is a copy of comments on IEEAF to Eurostat last year. Perhaps this text explains to you the present situation of forest accounts in Finland:

'From the point of view of Environmental accounting team of Statistics Finland the reasons (in page 1 of the Doc. FO/2012WG/5.3) Eurostat presents for their proposal on forest balance are very valid. The proposed formats for area and wood volumes are theoretically sound for both physical and monetary calculations. Based on our earlier experiences and pilots on forest accounts, it seems that most of the basic data needed for balance tables are available. Some of this data are directly applicable for accounting purpose. Some can be used in modelling and estimations that are needed to present the accounts at annual level. However, the row 'Other land with tree cover' and it's sub-rows are not very relevant for Finland and data availability on them is rather poor. It is also clear, that monetary value of forest land is more complicated to calculate than the value of timber.

It is expected, that value of forest assets will be required for national accounts according to the ESA in rather near future. This increases the need of forest land and timber balances. Co-operation between national accountants, forest statisticians and environmental accountants in compilation of forest balances will benefit the development of asset accounts in general. Connection between asset accounts in the ESA and forest accounts in the IEEAF should be highlighted also in the Eurostat work on forest accounts.

In Finnish environmental accounting, modules of Regulation of environmental accounting (environmental taxes, environmental expenditures, environmental goods and services and accounts for material flows, air emissions and energy) are at present the top priority areas. National demand for forest balances as such is not very high, because the most information required on forest resources is covered by the forests statistics. Only physical supply and use table and mass balance of wood are compiled annually at Statistics Finland. Some work will be done by environmental accountants to support the development of asset accounts according to the ESA requirements.

Anyway, the proposed tables of the forest balances could be populated in most parts. These tables could be used also by national accountants in their compilation of asset accounts. The forest balance tables are also an informative way to summarise and extend the use of results from 'traditional' forest reporting such as e.g. the TBFRA, but at present they can not replace these reports. If and when the forest balances will be published, it should be clearly shown how these balances differ from NFI data and other forest reporting. The idea of bridging tables used in some modules of environmental accounting should be applied to forest accounts as well.'

Unfortunately I do not have fresh knowlegde about the valuation of non-market forest functions. I hope that the following link helps you to find more information on this issue.

http://www.metla.fi/ohjelma/hyv/index-en.htm

Best regards, and good luck with your thesis
Jukka

Email 9:

Documentation of e-Mail	
Date:	**Correspondent:**
25/02/13 – 02/03/13	Marilise Wolf-Crowther (Eurostat)
Subject:	
"Collecting data on IEEAF participation for my masters froject on Forest Accounts"	
Text:	
"Dear Marilise Wolf-Crowther I am trying to establish an overview table of numbers of IEEAF participants - in the years 2009/10/11 - that includes details on which tables where completed. The Idea has come to me after speaking with Miroslav Kovalcik from the Slovakian Forest Research Institute. He sent me the IEEAF table completed by Slovakia for 2011. From here I can note which tables have been completed. I would like to tabulate the tables completed for as many nations as I can for the years 2009/10/11. I have attached a picture of an example of the table I wish to create. The table will detail which tables were completed by whom. I am writing to ask if you would be able to supply me with the tables submitted for 2009, 2010 and 2011 and I would then go through them and fill out my table. The reason for this is that I have received IEEAF tables for certain years from certain countries but I do not have many countries and in no case can complete the participation for all three years. Unfortunately tables are not always available on the websites of national forest organisations and language is a significant barrier to searching. I am unsure if you are able to send me the tables so that I can create this meta data on participation (I do not believe it is available anywhere) but I thought I would ask since contacting nations directly for this additional request will be very time consuming and success is not guaranteed. I would be very grateful for any help or advice you are able to offer. There must be some way to understand what has been completed by who[m]! Best wishes Mark Hedley University of Natural Resources and Life Sciences Vienna" **Reply:** "Dear Mark, I can't provide you with the data, which we hope to publish soon in validated form. But please find attached a table that shows who provided what for the tables other than 3c. For 3c, we published everything on our database under economic accounts for forestry and the AWU under employment in forestry. You can find the link below my signature. Kind regards, Marilise"	
Attached information:	**Details:**
"Overview_who provides what_06MAR2013.doc"	"Results of Levent Alpar's work as of July 2011, amended with the status as of February 2013: Availability of tables other than 3c"

Email 10:

Documentation of Email	
Date:	**Correspondent:**
27/04/13	Johannes Hangler (Lebensministerium, Austria)
Subject:	
Interview Preparation	
Text:	

Dear Johannes,

I have summarised the background and rationale for the interviews I wish to conduct at your own organisation and at Statistik Austria. I thought it best to cover all the information available and proposed questions for reasons detailed below. In most cases I have sent out email questionnaires to gather information but there have not been email questionnaires sent out to representatives in Austria.

The reason for this is the information I have available in the Austrian case rendering many of the initial questions asked and answered. In addition, I live in Austria and the process of an interview would allow a much more in depth explanation if more detailed questions could be formulated from the available material. One of the problems with posing questions on, for example, international statistical obligations is that I am unlikely to cover all the relevant points when writing a single round of questions. In this case communicating in a single round would likely mean missing important points.

For these reasons I have requested interviews at the Lebensministerium and STAT and have spent the last week drafting a list of questions to follow. In order to put the line of questioning in context I have included a rundown of what I think I know about the Austrian position on the IEEAF. The early part of the interview would be to verify or correct these assumptions before moving on to looking at more detailed problems like data availability and interest.

Clearly there is likely to be some distinction in the ability of the two organisations to answer questions so some categorisation will be necessary before the interviews take place to avoid putting questions to the wrong organisation and wasting interview time. However, this categorisation may complicated and since I might make mistakes I have forwarded the full list of suggested questions to both parties so that they may indicate to which questions they would be willing to give answers. The questions listed below may be rather general and some expansion during the interview is envisaged.
Additionally, I would welcome comments regarding points of interest that either of the interviewees believe are not included in the initial question set. In this way I hope to make the interviews more of a collaborative process rather than an extraction of information. In this case I believe this to be the best method as all parties have an interest in representing reality as accurately as possible.

What is known about Austria
Austria has to-date participated in the pilot applications of IEEAF but believes that the useful and accurate completion of the full tables is simply not possible for a number of reasons. In summary these reasons are:
1) ***No legal basis for completion:*** *This means that there must be an internal justification for making funds available for the work required to fill out the tables.*
2) ***Comparable input data unavailable:*** *the results of the completed tables are not as comparable as suggested as inventory homogenisation across the EU is not yet complete.*
3) ***Yearly reporting of forest extent is thought to have little practical meaning:*** *data for these yearly asset accounts is not measured but estimated and the methods of asset estimation are not consistent across the EU, so again, comparability is brought under question.*

4) *Completed tables will not completely cover international reporting obligations:* *For example the tables "F" cover only a small portion of LULUCF obligations.*
5) *Presenting data to a certain set of rules limits usefulness to individual nations:* *National statistical offices have limited resources for producing statistics and an obligation to produce statistics that represent the most use per cost to their taxpayers and so the loss of individuality does not appear to be offset by added comparative value.*
6) *Some definitions are vague and may lead to duplication:* *For example, round wood removals may include material that then later contributes to fuel wood or wood based fuel derivatives.*
7) In *some cases there is no clear method for data capture or valuation:* *This reduces the value of any possible comparisons*
8)*Some data are not available at the detail of categorisation requested let alone yearly resolutions:* *Distinction between fellings and removals. Damaged trees are removed and processed and therefore contribute under the fellings category while simultaneously being considered removals*

Questions

1. Given that there is no legal basis for completing IEEAF what conditions would need to be met in order for the work to be funded?
2. What current efforts are there to harmonise national inventories across Europe?
3. Would a structure such as IEEAF be useful internally if data were complete and comparable?
4. Are international comparisons useful internally?
5. Do you see official forest asset data not being available on a yearly basis being a communication issue with the public and the media? (This was mentioned as an argument by the FAO representative at the Forestry Statistics meeting).
6. Does the Lebensministerium conduct any of its own natural environment valuations for items such as recreation, CO_2 sequestration and protective functions?
7. Are there externalities envisaged that would not be covered by the current IEEAF tables?
8. Is there a plan to address the issue of over mature timber not being economically productive?
9. What are the differences between EUSTAT definitions used in IEEAF and the definitions used by STAT when categorising flows and assets that might be included in IEEAF?
10. How much extra time does it take to complete 3C in addition to the SNA?
11. What are Austria's current international statistical obligations regarding forests and the forest industry; accounts, physical data?
12. What LULUCF items are missing from IEEAF and would the IEEAF table on CO_2 be useful if all items were covered?

As I mentioned some of the questions will doubtless need expanding while others prove less significant. I suppose this is a paradox in that if I knew exactly what I needed to ask I wouldn't need to ask it. Anyway, I hope this clears things up and I look forward to meeting next week.

Sincerely

Mark Hedley

Email 11

Documentation of Email	
Date:	**Correspondent:**
11/06/13	Matthias Schermaier
Subject:	
Interview preparation	
Text:	

Dear Matthias Schermaier

I am sending you the questions I will ask during our interview on Thursday. I had intended to send you a summary of the interview at the Lebensministerium but my holiday has meant that I was a little slow writing this up and have not yet managed to verify it with Johannes Hangler.

I have listed the questions carried over first as some of the questions from the Lebensministerium interview would not be relevant in this case. These are followed by new questions that will hopefully lead to some more information about data obligations and issues with the IEEAF.

At any rate, the number of questions is similar and I expect that the interview will last for about an hour. For at least some of them I appreciate there might be no information available or only short answers possible. This is not a problem however; I imagine that we will concentrate more on items which are most relevant.

Thank you very much for you time.

Yours sincerely
Mark Hedley

Reply, after the inteview on 06/13/13:

Dear Mark,

attached please find some answers to your questions during the interview today, so maybe it's easier for you to compile the relevant information for some of your research issues.

We wish you all the best for finishing your thesis and are would appreciate it, if you could send us the link of your completed work.

Best regards,

Matthias

Attached information:	
Interview prep STAT.pdf	Annex 4
Antworten fuer Fragen von Mark	Full text from this document in annex 6

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