

# Green growth and the challenges in “greening” current statistical classifications

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This paper provides a brief discussion of what is meant by “greening the economy” and presents some reflections about what it means to “green” official statistical systems. Some challenges that we face in implementing these potential changes are also discussed. A brief analysis of some of the statistical categories and classifications that are currently used in official statistics will be presented. Information available from Statistics Norway is used to illustrate a number of points.

## **1 What is meant by “greening”**

Greening the economy has become a major focus for international (RIO +20) and national discussions. Several initiatives have been made to measure “green sectors” and “green technologies” as a response to the need for information helping to understand the transition to a greener economy – but what is meant by “green”?

### *1.1 Various definitions in use by different international organisations*

Many different organisations have embraced “green economy” and “greening” as the policy solution for the future. International organisations such as UNEP, ILO, OECD, World Bank, EEA, and the EU have all jumped in and made, for example, strategies, developed indicators, defined and described this theme. Sustainable development has also been connected to the green economy – sometimes strongly and other times at more of a distance. All of these initiatives are rather confusing when looked at initially, so here we try to identify the core of these to determine how these initiatives can influence national statistical institutes. Are the EU Sustainable Development Strategy and the Europe 2020 Strategy with the

supporting sets of indicators sufficient frameworks for measuring the progress towards a green economy or do we need to further develop these measurement frameworks?

One way to try to understand what is meant or being described is to look for definitions. The EEA states that, “a green economy is one that generates increasing prosperity while maintaining the natural systems that sustain us.” [1] The World Bank states that innovations that are “clean, efficient, resilient and socially inclusive” are the “elixir of inclusive green growth.” [2] The OECD says, “Green growth is about fostering economic growth and development while ensuring that the natural assets continue to provide the resources and environmental services on which our well-being relies.” [3] UNEP is describing a pathway towards a green economy and defines a green economy as one that results in “improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities...In its simplest expression, a green economy is low-carbon, resource efficient, and socially inclusive....The key aim for a transition to a green economy is to enable economic growth and investment while increasing environmental quality and social inclusiveness.” [4].

Green economy descriptions appear to be close to but not quite the same as sustainable development (SD). OECD [3] has described the differences between SD and green growth as follows: “Green growth is more narrowly focused with a strong policy component. Green growth emphasises (a) flows and the greening of economic growth, (b) economic opportunities such as fostering innovation, investment and competition that gives rise to new sources of growth and (c) takes an ‘optimistic’ stance about growth and resilient ecosystems.”

The linkages between green growth and Sustainable Development are strong – it seems almost impossible to mention SD without now also referring to greening of the economy and vice versa. The European Commission stated before the recent Rio+20 Conference that “An inclusive green economy is an important vehicle for progressing towards sustainable development” [5]. Green growth was a key element in the Rio+20 Conference on sustainable development in June 2012 in Rio. The UN Secretary-General Ban Ki-moon said during the meeting that “our vision must be clear: a sustainable green economy that protects the health of the environment while supporting achievement of the Millennium Development Goals through growth in income, decent work and poverty eradication.” [6].

From these definitions and from the documents accompanying and describing these green growth initiatives, it appears that green growth or “greening” the economy encompasses two main paths: “greening growth” and harnessing new economic growth possibilities based on environmental considerations.

### *1.2 Responses from the statistical offices to green growth initiatives*

Policy makers typically look for information to help them with policy making decisions – in a fact based approach to policy making. What seems clear from the definitions used by international organisations is that a green economy is a broad concept encompassing much more than e.g. reducing carbon dioxide emissions. The main problem is that the definitions are rather general in nature, are not exact enough and are not fit for the production of statistics that can be used for measuring performance in the area of “greening” the economy or “green” growth. None the less, national statistical institutes have tried to meet this new user need by finding information related to the process of “greening” in the economy and information about the “green” parts of economic activity.

All activities embody some level of environmental pressure and could be placed along a continuum of “green” to non-“green”. For example, production of electricity from renewable sources such as hydropower is typically labeled as “green”, while electricity produced using fossil fuels is considered non-“green.” Of course this is only from a carbon dioxide emissions perspective and not from a biodiversity viewpoint. The correct description of “green” versus non-“green” should therefore be along a continuous scale and not divided into two parts or binary variable. A blind focus on greenhouse gas emissions / climate change is much too narrow a perspective and a more holistic view of the environment, including biodiversity and ecosystems, is warranted.

“Greening” implies a process over time. Finding evidence of “greening” depends on how one defines it, but if environmental performance is considered a measure of “greening” then measures of efficiency, productivity and decoupling could be appropriate metrics. Ratio indicators that include energy use, emissions to water and air or solid waste production per unit of production could be these types of environmental performance measures. Of course as technology changes environmental performance can also improve if the newer products or production processes use less energy, fewer hazardous or toxic chemicals, are produced with lower amounts of raw material inputs or less waste results. Technology can contribute to

improvements and if this is called “greening” then these types of technological changes can result in “greening.” If these types of indicators are improving over time then “greening” could be claimed although if one part of the ratio is dominating the change it may not be valid to claim “greening.”

For producing these types of ratio indicators it is important to have matched data sets where the system boundaries for the numerator are the same as for the denominator. In addition it needs to make sense to compare the two factors since combining them strongly implies mutual casualty. If there is doubt whether these two things are linked, then it may be wiser to avoid constructing these types of combined indicators.

Environmental economic accounts that combine environmental and economic data are typically used to develop these types of information – in Europe these combined or hybrid accounts have been called “NAMEA” type of accounts. NAMEA stands for National Accounts Matrix including Environmental Accounts. Basically the supply and use system of the national accounts is extended to include environmental data. Most countries in the European Statistical System have developed these types of accounts, particularly for air emissions, but also for energy use. Air emission accounts will be required annual reporting to the European Commission (Eurostat) from 2013 onwards and required annual reporting for Energy accounts will most likely follow from 2015 onwards.

The Netherlands [7] and Australia [8] have used these types of environmental performance data in their Green growth reports to show the “greening” or environmental performance of different industries. Many other countries also publish environmental profiles and performance of industries but have just not called them “greening” yet.

A second approach to measuring a green economy is to identify the different parts of the economy that could be considered “green”. When taking this approach certain industries, products, economic transactions, etc. that are defined or somehow identified as “green” are separated from the other “non-green” activities and are presented as the “green” portion of the economic activity.

The challenge is to unambiguously define “green” is such a way that it is not a normative concept that will be interpreted differently by different people. A clear way of judging whether something should be included or excluded is necessary to enable

comparisons between countries and over time. And this is where we start to have some real challenges.

The System of Environmental Economic Accounting (SEEA) Central Framework [9] is a multipurpose, conceptual framework that describes the interactions between the economy and the environment. A definition of “green” does not exist in SEEA and in fact only a general definition of “environmental protection” can be found. So if the definition of environmental protection from SEEA is used, it will cover only some aspects of “green.” The limitations of the SEEA should be remembered since it only includes natural resources that have market or near market prices. This means that important environmental topics such as biodiversity and ecosystems are not covered by the SEEA Central Framework. However, this is currently the main framework available in the statistical system.

SEEA identifies a number of activities that are relevant to measuring a “green” economy. There are descriptions of the environmental goods and services sector (EGSS), environmentally related taxes, environmental protection expenditure and resource management expenditure – including investments and current costs, emissions trading schemes and permits, environmentally related subsidies. Other transactions such as potentially environmentally damaging subsidies are acknowledged but due to lack of good definitions these types of transactions are not specified.

Most European countries have been reporting environmental protection expenditure (investments in end-of-pipe and integrated technology and current costs) in the extraction and mining industries and the manufacturing industries for over a decade to Eurostat. These statistics provide information on the demand/use side for environmental protection equipment and services. These statistics could be used to describe some aspects of a green economy but it is not clear whether an increase in these types of expenditures should be considered ‘good’ or ‘bad’ for the environment. Higher levels of expenditure do not necessary mean a cleaner/better/more robust environment.

## **2 A closer look at what we currently find in the statistical system**

The efficiency – resource productivity – intensity perspective is fairly well established. The data availability and the industry breakdowns needed to correctly produce these statistics and indicators are also relatively well established and good quality data are obtained. But

what is not as well established, are approaches to separate out the “green” part of the economy. The national accounts (or balance of payments) are often listed as a source when indentifying the parts of the economy that are to be considered “green”.

When trying to separate out the “green” parts of the economy, another issue arises which is whether we are looking at the production processes and what goes into making goods and services – i.e. the input side of the picture – or whether we are looking at how the products and services themselves – i.e. the output of the economy. Green labelling and environmental management schemes include a mixture of these views. The environmental management schemes focus on the processes within an organisation. The green labelling of products can include how the product is manufactured, how it is used and its disposal. This mixture within the “greening” viewpoints makes it more likely that double counting can arise when trying to make statistics about “greening.”

### *2.1 National accounts*

Technically speaking, the national accounts cover all economic transactions; this means that in principle, the relevant “green” transactions are also included. This does not imply, however, that these relevant “green” transactions are identifiable or retrievable from the accounts. It is fair to say, that the most probable contribution from the national accounts is to be expected in the area of environmental-specific services. In Norway, this contribution would be statistics on the industries often referred to as “specific producers” or “core-industries”. These economic activities are easy to identify in the NACE classification of economic activities, and covers the NACE industries 36–39, i.e. the Water collection, treatment and supply, Sewerage, Waste collection, treatment and disposal activities, materials recovery, Remediation activities and other waste management services. From other industries listed, the Norwegian national accounts are close to giving relevant data for activities in NACE 35, Production of electricity, but we cannot exclude the small part in Norway that come from non-renewable sources. Please note that defining hydroelectric power as “green” is only valid from a CO<sub>2</sub> emissions perspective since hydropower is typically very damaging to ecosystems that are disrupted by the dams and the other infrastructure needed for hydropower production – turbines, pipelines, water flowing downstream of the dams, etc. If activities and products are identifiable in the standard classifications then it can be relatively easy to identify and isolate information on these types of activities especially for establishments that have these as their primary activities. But one must be very conscious of the problem of

which environmental perspective is used – for example is the focus on climate change or biodiversity or ecosystems – when taking this approach.

The challenge arises when only parts of a NACE industry are considered “green” or when it is a secondary or ancillary activity. In order to identify establishments that have “green” transactions but cannot be identified by simply using NACE codes (i.e. not part of the "core" environment industry), a combination of various sources can be used. One solution is to identify these establishments through the products that they produce. Both in the Statistics Norway National Accounts and in the PRODCOM (PRODucts of the European COMMunity) register it is possible to identify product-categories and connect these to the producers of these products.

The big challenge lies in the identification of what products to be defined as environmental goods and services. From the Norwegian National Accounts Product list or the Central Product Classification (CPC) list, only a very few products and services can be identified as purely environmental ones. In most cases, the products that are identified as purely environmental are those produced by the core industries – i.e. NACE 36-39. The use of environmental products and services classified by the Norwegian National Accounts Product list or the Central Product Classification (CPC) list will therefore not help us in identifying "non-core" environmental goods and services industries.

Even though the Norwegian national accounts are rather detailed with respect to products, specifying about 800 products, yet the products are defined in a rather general way. In many situations, it is the *use* of a specific product that defines whether or not it is considered as an environmental product. In general it is not possible to know the purpose or the uses of a specific product from the definition of the product alone. Rather, the products and the industries are tied together in such a way that, if the production in an industry can be used for many general purposes, so can the products that the industry produces. It should also be added that the quality of the product data in the national accounts is difficult to maintain. At Statistics Norway, the trend is to reduce the product detail in the accounts and to avoid publishing product information at detailed levels. Increasingly, the data collected are from administrative sources which do not give specific product information. The relevant products and uses are simply not evident in the input to the national accounts and that is why there is

limited information that one can find either in the detailed pre-systems or in the output of the accounts.

In its manual for collection of data for the Environmental Goods and Services Industries, OECD/Eurostat [10] refers to a list of environmental goods classified by the Harmonized Commodity Description and Coding System (HS-system) for international trade that are to be considered as environmental ones. The HS-system is more detailed than the CPC-system, which might make it more likely to identify pure environmental goods using the HS-system.

The HS-system only includes products and not services, which means that using the HS-system to identify environmental industries mostly will reveal businesses not included in the “core” environmental industries, as the core-industries broadly can be seen as service industries. In theory, it therefore appeared that by combining HS-codes and PRODCOM, we would be able to indicate the share of output of the manufacturing activities related to the production of environmental goods in the non-core manufacturing industries.

Although the HS-codes are more detailed than the CPC-codes, we experienced the same problem with identifying pure environmental goods when looking closer at the HS-product codes. The list of environmental goods referred to in the OECD-manual is not a list of HS-codes referring to purely environmental goods. Of the 123 HS-product codes referred to, only 4 HS products can be characterised as purely environmental goods. The other 119 HS products are so-called dual-use and/or multi-purpose products that can also be used for non-environmental purposes (e.g. filters, pumps and pipes). In order to know if these products can be identified as environmental ones, more information either about the producing firm or from the demand side is needed. This is also something that changes over time, since a product which gives an environmental improvement today can become standardised equipment within a few years. This makes our work with defining the environmental establishments based on the product description even more difficult.

Even though classifications for industries or goods and services may become more detailed in order to specify the purely “green” parts, one cannot expect to find such information in the national accounts unless it is present in the data sources that the accounts have available for input data.



## 2.2 *The Environmental Goods and Services Sector (EGSS)*

If we go beyond these general activities, it becomes much more difficult to identify what should be included and excluded. The Environmental Goods and Services Sector (EGSS) is one example of the difficulties we face. EGSS is a statistical system developed in order to identify those industries that are producing environmental – or “green” – goods and services and the employees involved in these “green” activities. Due to the lack of principal definitions, the specifications of the EGSS reveal several problems.

The EGSS delineates "those economic activities whose primary purpose is to reduce or eliminate pressures on the environment or to make more efficient use of natural resources" (the purpose perspective). Adapted goods include goods that have been specifically modified to be more “environmentally friendly” or “cleaner”. In principle, no activity or products has environment as its main purpose. All activities are driven by the incentives of maximizing output/profit at given costs, no matter what is produced. All products change over time typically becoming more energy efficient so again it is not possible to draw principal lines.

It seems, however, that the relevant descriptions for EGSS purposes would not only include physical descriptions of products, but would also have to include the purpose for which they are designed, or in the case of general products with multiple purposes the used of the products must also be included. This design/use element is to a large extent missing from the product definitions of the present national accounts and the present administrative sources for product data. It is hard to think of any other way to collect such data than to ask users what they use and for what purposes.

At Statistics Norway we have mostly focused on product and industry classifications but UNSD [11] has identified the following classifications as being affected by the “green growth” initiatives: industries/activities, products, occupation, education, R&D programs, and financial flows. Again, when examining these classifications in more detail, the conclusion is the same – the categories are too broad to be used to identify the “green” part.

## **3 Conclusions**

Green growth appears to encompass two paths: “greening” economic activity and harnessing new growth possibilities based on environmental considerations. Measuring the

greening of the economy is less problematic than identifying the economic activities that have an environmental aspect to them.

Eurostat [12] has emphasized the use of statistics especially when looking at the greening of the economy and the use of information in policy making, and state that modelling and analyses play a key role in developing green economy policies. These types of analyses – such as input-output analyses – need data that are coherent and that include environmental, economic and social statistics. Making more out of existing data and statistics is a cost effective way of meeting user needs. But new users often need some modifications to existing systems in order to obtain the perspective they are examining.

UNSD has pointed out that classifications are designed for describing objects in certain settings and applying the classification at another point can cause measurement issues. In addition, introducing new concepts in existing classifications requires caution and considerations of conceptual consistency, measurability and the target users of the classification – i.e. data providers. [11]

Although countries and the OECD, Eurostat and the UN have all been trying to separate out the environmentally related portions of the economic activity, the results have often been less than satisfactory and the cost of obtaining this information is generally very high since either separate business registers are needed to be established and maintained or highly detailed surveys are needed.

In addition, even if we “green” current statistical classifications, one cannot expect to find information on “green” transactions in the national accounts unless the data are present from the data sources that are input into the national accounts. This will often require the establishment of new data collections – but it is not a given that the businesses are able to report on their green activities. The “green” or environmental part that is asked for might be an integrated part of a transaction not specifically visible or able to be isolated or identified in the company accounts. In an analysis of green activities and statistics, Bruvoll, et al. [13] conclude that from a theoretical perspective it is not possible to consistently delineate green activities from the rest of the economy. The reason is that all activities bring along some level of environmental pressure, and are hence more or less green. In a discussion of how to measure green sectors, Pöyry [14] concludes that it is difficult to make precise delimitations

of green sectors, even for sectors with a clear main focus on producing environmentally friendly solutions.

In order to produce valid, good quality, comparable statistics to meet user needs for information about “greening the economy” and about the “green” portions of economic activity clear definitions are needed. This is what is currently lacking in the discussion and description of “greening” and the “green economy.” Definitions of what we are wanting to measure, how to measure it and why this information is needed are important to clarify before more resources are used on this topic in the European Statistical System.

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ENDNOTES:

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