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Economic radar of the sustainable energy sector in the Netherlands

Additional Research and Figures: Ultimate Control, Foreign Direct Investment and Depreciation

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Remarks:
The views expressed in this paper are those of the author and do not necessarily reflect the policies of Statistics Netherlands.

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1. Background and introduction

In June 2012 Statistics Netherlands published the publication 'Economic Radar of the sustainable energy sector in the Netherlands'. This monitor of the Sustainable Energy Sector (SES) published by Statistics Netherlands (CBS) is a follow-up to the study conducted in 2011 (Economische Radar Duurzame Energiesector). The 2012 study was, just as in 2011, commissioned by the Ministry of Economic Affairs (EZ). Detailed economic core-indicators like value added, employment, production, and exports for the sustainable energy sector are presented for the years 2008 and 2009. The relevance of monitoring the sustainable energy sector lies in evaluating economic opportunities of the Netherlands in the global transformation towards a renewable energy supply as well as an increasing focus on energy conservation. Several geopolitical, economic and environmental developments motivate policies focused on promoting the energy transformation in the Netherlands. The mentioned publications very much focus on core-economic indicators for the SES.

This publication (December 2012) is an addition to the study conducted in June 2012. In this study we focus on three new research topics for the sustainable energy sector. This study is still in the learning phase. These topics are:

Ultimate control in the Sustainable Energy Sector

Globalisation has become a well-discussed topic over the last two decades. Particularly for a small and open economy like the Netherlands, international developments have serious consequences (Internationalisation Monitor 2011, CBS, 2011). Globalisation can be monitored using the concept of company control. Company control is based on the concept of the Ultimate Controlling Institute (UCI), as defined by the FATS Regulation. In this publication we present economic data for ultimate of control in the Dutch sustainable energy sector.

FDI in the Sustainable Energy Sector

Globalisation and internationalisation can, instead of by means of UCI data, also be monitored using Foreign Direct Investments (FDI) data. The aim of this part of the project is to analyse the feasibility of presenting economic figures for FDI in the Sustainable Energy Sector (SES) of the Netherlands. Direct investment includes transactions relating to the acquisition of equity capital by enterprises in enterprises abroad (by means of establishment, merger or acquisition) with the aim of obtaining a degree of management control. Direct investment also includes all other financial transactions between affiliated enterprises (loans, reinvested earnings, changes in intra-group current accounts), as well as purchases and sales of real estate (source: DNB).

Depreciation in the Sustainable Energy Sector

The sustainable energy sector, specifically the exploitation stage (renewable energy production), is characterised by high capital intensiveness. Therefore, it is likely to

be subject to substantial depreciation costs (or consumption of fixed capital). Because the cost of depreciation is an important variable for both investment decisions and results, it is important to study it in more detail. Moreover, this study already presented numbers on gross value added, but for an entrepreneur his profit depends on the net value added (= gross value added minus depreciation costs). As the difference between these two is the cost of depreciation, it is an essential variable in determining whether the SES has been profitable or not. Moreover, net value added allows for a more economically valid comparison of the SES with other sectors.

As already mentioned this report is an addition to the SES radar 2012 of June and contains three chapters discussing three research topics. For more information on the core-economic indicators for the SES we refer to the 'Economic Radar' (Statistics Netherlands, 2011 and Statistics Netherlands, 2012). Chapter 2 of this report discusses statistics related to ultimate control in the sustainable energy sector. Chapter 3 analyses the feasibility of presenting economic figures for foreign direct investments (FDI) in the sustainable energy sector of the Netherlands. Chapter 4 shows the results of our feasibility study on the compilation of consumption of fixed capital numbers (depreciation) representative for the sustainable energy sector.

2. Ultimate control

2.1 Introduction

Globalisation has become a well-discussed topic over the last two decades. Particularly for a small and open economy like the Netherlands, international developments have serious consequences (Internationalisation Monitor 2011, (CBS, 2011)).

To accurately and consistently measure the process of globalisation is an enormous challenge for statistical authorities. Existing statistical concepts and frameworks – for instance various macroeconomic indicators, systems of national accounts and balance of payments principles – become increasingly difficult to construct. In addition, the ever expanding activities of enterprises (and persons) abroad are inherently difficult to observe by statistical agencies, which are often restricted to a national mandate and area (Internationalisation Monitor 2011, (CBS, 2011)).

Globalisation aspects can also be monitored for the sustainable energy sector. Globalisation can be monitored using the concept of company control. Why is the subject 'company control in the SES' interesting to monitor? The energy sector has major challenges concerning development/internationalization of energy infrastructure and more low-carbon energy including renewable energy and energy saving. In this context several financial, political and technology bottlenecks have to be dealt with often in a European context (see communication European Commission on the EU Energy Roadmap 2050, December 2011). Financial challenges are for example access to bank credit, the financial position of firms (the need to deleverage), indivisible investments, and strategic priorities in relation to the Ultimate Controlling Institute (UCI). Political challenges relate to issues like financial contribution by governments, industrial policy, public-private relationship, the field of tension between nation states and the European Commission. Lastly there are all kind of technological challenges like uncertainty in technology progress, the need to invest in R&D, matching of decentralized / irregular supply and demand peaks. From a political perspective, in order to tackle these bottlenecks, the subject of control is relevant.

2.2 Concept and method

Company control is based on the concept of the Ultimate Controlling Institute (UCI), as defined by the Foreign Affiliate Trade Statistics (FATS) Regulation. The UCI is defined as an institutional unit, proceeding up a foreign affiliate's chain of control, which is not controlled by another institutional unit. Therefore, foreign controlled enterprises have a centre of control outside the Netherlands, whereas Dutch controlled means that the locus of control is in the Netherlands. 'Control' is defined as the ability to determine general corporate policy by appointing appropriate directors. The ultimate control is allocated to a single country in full.

The UCI is determined on an annual basis by combining enterprise information from various sources (Internationalisation Monitor 2011, (CBS, 2011)).

The UCI is determined on an annual basis by combining enterprise information from various sources, a combination of CBS conducted surveys (SFGO: Survey Financial Statistics of Large Enterprise Groups, and CIS: Community Innovation Survey) and external sources (Dunn & Bradstreet database). This merger of enterprise information with registered jobs in the Social Statistical Database results in a match for more than 90 percent of the total population of enterprises for which the locus of control can be determined.[1](Internationalisation Monitor 2011, (CBS, 2011)).

The data for the annotated figures in this chapter are based on an integration of the micro data from the CBS business survey and the UCI (Ultimate Controlling Institute).

2.3 Results

Out of 729 companies in the pre–exploitation phase of the SES in the Netherlands (P-SES) 106 companies are foreign controlled. For these 106 companies, some basic economic information has been collected.

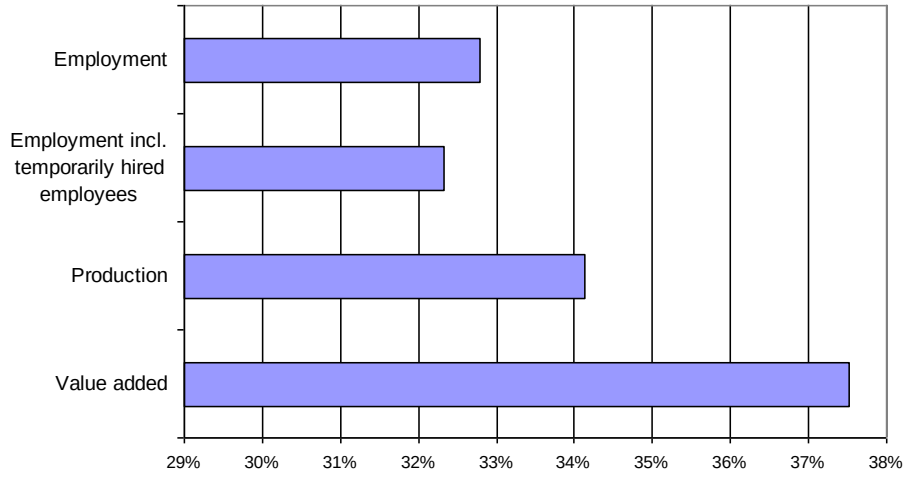
Table 2.1: foreign controlled companies in the pre-exploitation phase of the sustainable energy sector

	2009
Value added (mln euro)	430
Production (mln euro)	1,340
Employment including temporarily hired employees (FTE)	5,100
Employment (FTE)	4,800

Foreign controlled companies in the pre-exploitation phase of SES generated 430 million euros value added in 2009. Production is equal to 1.3 billion euros. Employment of foreign controlled companies is equal to 5,100 man-years (including temporarily hired employees) or 4,800 man-years (excluding temporarily hired employees).

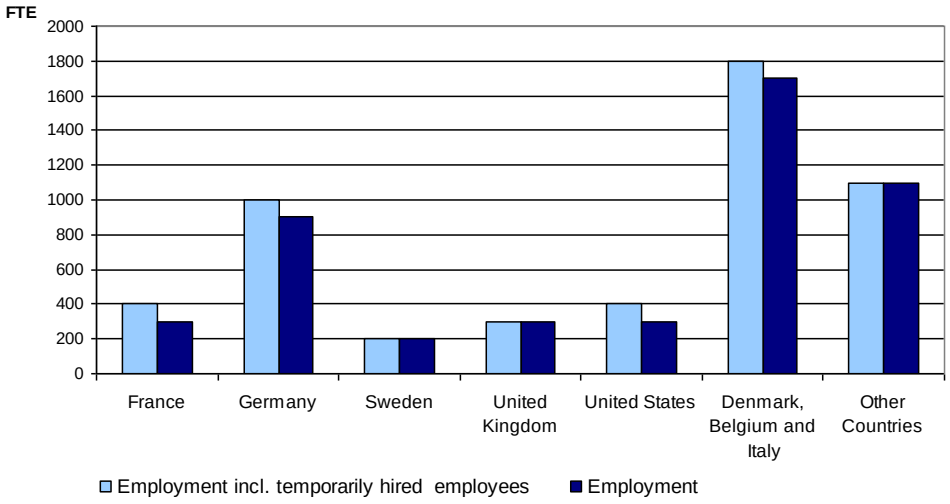
[1] Note that the direct investor is not necessarily the ultimate controlling institutional unit (UCI). For example, if a Dutch enterprise controls a German enterprise that controls an Austrian enterprise, the UCI of the Austrian enterprise is Dutch, but the direct investor in Austria is German.

Figure 2.1: Share of foreign controlled companies in the pre-exploitation phase of the sustainable energy sector, 2009



Foreign controlled companies in the pre-exploitation phase of the SES were responsible for 38 percent of total value added of SES in 2009. The share in production is equal to 34 percent, the employment-share of foreign controlled companies is equal to 32 percent (including temporarily hired employees) and 33 percent (excluding temporarily hired employees) of total employment. For all employees in the Netherlands this figure is approximately 15 percent (excluding the financial sector), so foreign control plays a relative big role in the P-SES (CBS, 2011).

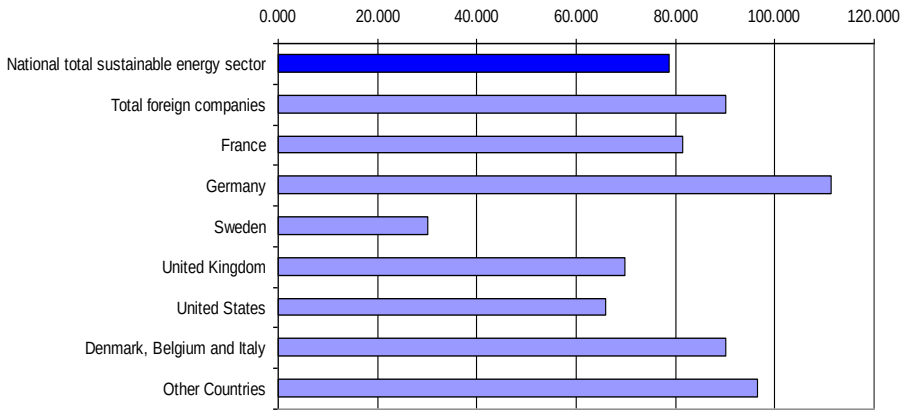
Figure 2.2: foreign control in the pre-exploitation phase of the sustainable energy sector, per country, 2009



Germany, France, United Kingdom and United States played a big role in the P-SES in 2009. The group Denmark, Belgium and Italy played a big role in 2009 especially in energy saving and wind energy. These countries are presented as a group for reasons of confidentiality. Approximately 1,000 man-years are working in German

controlled companies. More than 1,100 man-years are working in 'other countries' controlled companies. This number is quite big and cannot, unfortunately, be made explicit due to confidentiality issues. Based upon current insights of the population of the pre-exploitation phase of the sustainable energy sector, Russia does not play a role in the P-SES in 2009.

Figure 2.3: Value added (euros) per employee in the pre-exploitation phase of the sustainable energy sector, 2009



Foreign controlled companies in the pre-exploitation phase of the SES generate more value added per employee than the P-SES on average does. Especially German controlled companies generate more value added per employee than on average. Value added per employee in American and Swedish controlled companies is smaller than the average. Differences in value added per employee in between countries can be explained by three major factors. Firstly there can be differences in the level of capital intensiveness of activities in between countries (return to capital is a component of value added). Secondly, there can be differences in profit levels caused by differences in productivity in between different groups. Lastly, differences in the level of wages paid to employees can also explain the differences in value added per employee in between countries. Further in depth research is needed to quantify the effect of these different factors.

German controlled companies are often active in manufacturing activities, which is relatively capital intensive, explaining partly the high value added per employee ratio. Value added per employee in Sweden is small due to the fact that companies, due to difficult economic circumstances, can generate negative value added.

2.4 Conclusion

For the pre-exploitation phase of the sustainable energy sector it is possible to compile economic key-figures for foreign controlled companies in the Netherlands. These statistics are based upon already existing registers. Foreign controlled companies in the pre-exploitation phase of the SES were responsible for 38 percent of total value added of SES in 2009. Approximately 23 percent of total value added generated by the Dutch economy (private Dutch sector, excluding financial sector), is generated by foreign controlled companies (CBS, 2011), so foreign control plays a relative big role in the P-SES. Foreign controlled companies in the pre-exploitation phase of the SES generate more value added per employee than the P-SES on average does. For the exploitation phase we have not compiled figures so far. This is because for the exploitation phase we did not develop a bottom-up micro approach in the first place. If one would like to analyse control structures in the exploitation phase as well, it is recommended to construct such a micro-database of companies engaged in the exploitation phase in the near future. There are of course also Dutch controlled companies active in foreign economies. So far we do not have micro-information on companies active in foreign economies which are Dutch controlled and fit into the definition of the sustainable energy sector. No such database exists. More research is needed here.

3. Foreign Direct Investment

3.1 Introduction

The aim of this part of the project is to analyse the feasibility of presenting economic figures for foreign direct investments (FDI) in the sustainable energy sector of the Netherlands. Direct investment includes transactions relating to the acquisition of equity capital by enterprises in enterprises abroad (by means of establishment, merger or acquisition) with the aim of obtaining a degree of management control. Direct investment also includes all other financial transactions between affiliated enterprises (loans, reinvested earnings, changes in intra-group current accounts), as well as purchases and sales of real estate. (Source: DNB[2])

3.2 Definition, concepts and data sources

Data on FDI is collected and published by the Dutch Central Bank (DNB). When considering FDI the distinction between flows and positions is important. 'Flows' comprise transactions that during a given period are entailed by the acquisition of share capital by Dutch residents abroad (*outward*) and vice versa (*inward*) for the purpose of gaining control. Direct investment furthermore includes all other financial transactions between affiliated companies (loans, retained earnings, current account changes, working capital deposits), as well as real estate purchases and sales. The direct investment positions comprise the total value of the external claims and liabilities of Dutch enterprises at a given moment in time. The positions comprise the cumulative transactions, corrected for price, exchange rate and other changes (incl. impairment of goodwill) and concern both capital interests and the other forms of direct investment described above. (Source: DNB)

In conformity with the fifth edition of the IMF Balance of Payments Manual, the directional principle is applied for the measurement of Dutch direct investment abroad and foreign direct investment in the Netherlands, meaning that financial flows (and related income flows) from subsidiaries to parent companies are netted out with transactions from parent companies to subsidiaries.

3.3 Compiling FDI data for the SES

In this paragraph we examine the possibilities to calculate FDI figures for the pre-exploitation stage of the sustainable energy sector (P-SES). As a first step, the population of companies in the pre-exploitation of the P-SES has been merged with DNB-data on FDI.

[2] http://www.statistics.dnb.nl/index.cgi?lang=uk&todo=Balans

After merging the SES-population with FDI data experts of Statistics Netherlands and DNB have brainstormed on the quality and feasibility of the available data. Two typical problems were underlined:

1. *Units used in FDI data versus units used in SES population*

The population units in the P-SES population are establishments (subsidiary (company)). For these establishments we have compiled economic data on employment, production and value added. FDI data is collected by DNB on 'group level'. The FDI figures cover larger entities than the establishments in de P-SES. Allocating the FDI figures of holdings to the establishments in de P-SES is next to impossible.

2. *Combination of instability in FDI data and small specialisation factors*

The P-SES consists of companies engaged in the production of relevant good and services in full (specialised) and of companies that are only partly active in the value chains that relate to sustainable energy products (non-specialised). Specialisation factors have been developed for establishments. These factors cannot be applied to FDI data which are representative for enterprise units. Another problem is the fact that companies engaged in FDI are very often non-specialised and large companies. Only six companies in the P-SES reporting FDI are more than 20 percent specialised in sustainable energy products. The small specialisation factors of FDI reporters in the P-SES make it most uncertain whether this FDI really relates to sustainable energy or energy saving activities or not.

In consultation DNB's experts, Statistics Netherlands concludes that is not feasible to compile useful FDI data for the P-SES based upon register information only. A special questionnaire for companies in P-SES may gather the data required for figures on FDI in the P-SES. This however results in an additional administrative burden and is in contrast with our aim to use already available data sources only.

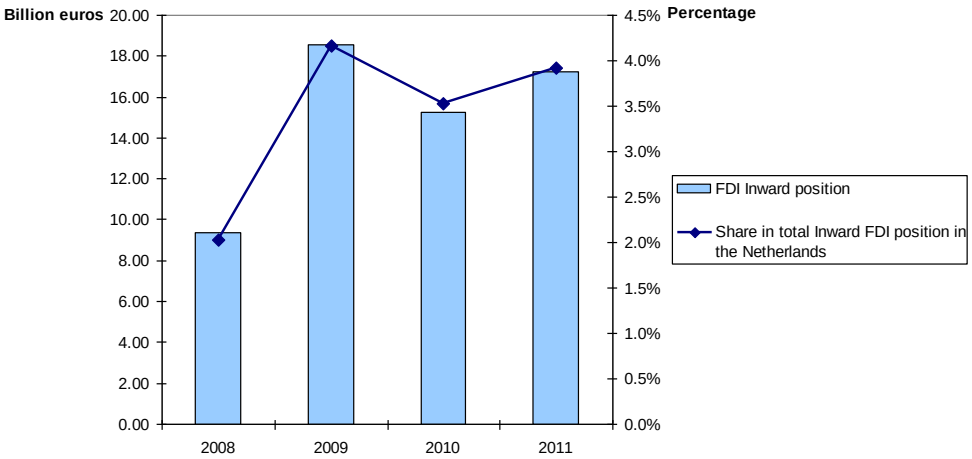
Aside of the pre-exploitation phase the sustainable energy sector also describes the exploitation phase. These producers of renewable energy have often strong ties with companies in the conventional energy sector (some electricity producers are both producing renewable based electricity as well as fossil based electricity). The electricity, gas, steam and air conditioning supply corresponds with NACE class 35. On request of Statistics Netherlands, DNB has made an overview of FDI for this NACE classes between 2008 and 2011.

3.4 FDI positions in the Dutch electricity and gas supply industry

The focus of our description of FDI in the Electricity, gas, steam and air conditioning supply is on end of year FDI positions. Figure 3.1 presents the development of total inward FDI and total outward FDI positions at the end of the year (2004-2010). The value of the inward FDI position doubled between 2008 and 2009 because foreign European companies bought substantial positions in two

Dutch utility companies. The share of inward FDI positions in Energy supply companies in total FDI grew considerably over time from a share of 2.0 percent in 2008 to 4.2 percent in 2009.

Figure 3.1: Value of inward FDI positions in Electricity, gas, steam and air conditioning supply industry in the Netherlands and the share of this industry in the total Dutch inward FDI position, 2008-2011 (source: DNB)



Although DNB provided more detailed information of the FDI positions (e.g. geographical dispersion) as well as other relevant NACE classes, confidentiality policies of both DNB and Statistics Netherlands prohibit publication of these figures.

3.5 Conclusion

Data on FDI of companies in the P-SES is generally not collected by DNB on establishment level. Companies that belong to the same group and that are active in the same sector report jointly their FDI data. The P-SES includes a lot of small and often specialised, dedicated companies but also large non-specialised global companies, which produce sustainable energy products as well as unrelated goods or services. When considering FDI the larger companies are dominant, but as data is available only on 'a group level' it is unfortunately unfeasible to estimate reliable data on FDI specifically for sustainable energy and energy saving.

The electricity, gas, steam and air conditioning supply can be defined using NACE class delineation and calculating FDI for this sector is feasible. Confidentiality issues may prohibit the publication of other relevant NACE classes and more detailed figures (e.g. geographical dispersion). The results show an increase in the value of inward FDI positions between 2008 and 2011. This is a result of Dutch energy companies that are bought by companies located in other European countries in 2009.

4. Depreciation

The production of energy from renewable resources is supposed to be capital intensive. This would imply that the sustainable energy sector has substantial depreciation costs. In general, depreciation costs are important because they affect the economic profitability and hereby the investment decisions of entrepreneurs. Furthermore, the relative size of depreciation costs gives us an indication whether the supposed capital intensiveness of the SES.

The level of *gross* value added of activities in the SES has been presented in the Economic radar of the sustainable energy sector in the Netherlands (June 2012). The determination of the depreciation costs allows for the calculation of *net* value added. The net value added indicates the profitability of the SES and allows for a more economically valid comparison of the SES with other sectors.

This section makes a distinction between the exploitation phase (e.g. energy production from wind turbines) and the pre-exploitation phase (e.g. manufacturing, transport and R&D of wind turbines) of the SES (i.e. the E-SES and P-SES). Both sectors require different methodologies as the data that is available for both sectors is quite different. The next section briefly discusses the methodologies used for calculation of the figures on depreciation. Section 4.2 and section 4.3 present the figures for the E-SES and P-SES activities separately. The final part of this chapter describes the net value added of activities in the SES and the comparison to other activities in the economy as well as the conclusions that result from the depreciation figures.

4.1 Concepts and methodologies

Consumption of fixed capital (i.e. depreciation) represents the reduction in value of the fixed assets used in production during the accounting period resulting from physical deterioration, normal obsolescence or normal accidental damage (OECD, website). In order to estimate the depreciation figures for both the E-SES and P-SES two methodological approaches have been developed. In paragraph 4.1.1 and 4.1.2 we discuss the methodology for the E-SES and P-SES respectively.

4.1.1 Methodology for the estimation of depreciation in the E-SES

The compilation of figures for depreciation for the various E-SES technologies requires the estimation of the accumulation of capital for different E-SES technologies. These fixed capital formation figures are obtained in two steps. The first step concerns the collection of data on the annual accumulation of fixed capital expressed in MegaWatts (MWs), for which data over the period 1990-2011 is available on Statline (link). This data on the accumulation of fixed capital in MWs allows one to calculate the newly installed capacity for each year (i.e. the difference between two consecutive years). In the second step the newly installed capacity in MWs is translated into (millions of) euros by multiplying the MW series by its (technology specific) investment costs per MW for the specific years. The investments costs per MW for the various technologies and for a number of years were reported in a number of reports by ECN (ECN, 2002, 2003, 2004, 2007, 2008, and 2009). This calculation results in annual time series of the newly installed fixed capital formation for each individual technology.

In order to translate this time series into depreciation figures that are consistent with the national accounts, we simply assume that the value of fixed capital goes to zero in fifteen years, as is also assumed in the national accounts. This defines the total accumulation of fixed capital as:

Fixed capital formation at year t = Fixed capital formation at year $t - 1$ +

Newly installed capital at year t – depreciation at year t

Where depreciation at year t can be written as:

Depreciation at time t = (Fixed capital formation at time $t - 1$)/15

Setting "Fixed capital formation at 1990" = 0 and combining (1) and (2) gives us depreciation estimates for each of the consecutive years. The results are presented in section 4.2.

For the technique 'cofiring in energy production facilities' an alternative methodology has been used for the compilation of figures on depreciation. Information on total depreciation in this industry (NACE 35) is readily available at Statistics Netherlands. Partly this figure is allocated to cofiring based on the share of energy produced by cofiring biomass in total energy production by this industry.

4.1.2 Methodology for pre-exploitation phase

The methodology to calculate the depreciation figures of activities in the P-SES is equal to the methodology used in the calculation of other key economic figures like production value and gross value added. On a micro level, the depreciation figures of the relevant companies are retrieved from already available data of Statistics Netherlands' production survey. For companies where no survey data material is available estimation has been calculated. This estimation is based on existing information of available companies in the P-SES that are active in the same economic activity (NACE class). About 80 percent of total depreciation of the P-SES is based on observations (surveys).

4.2 Depreciation of the different technologies in the E-SES

Table 4.1 below presents the depreciation figures for 2009 for the different technologies.

Table 4.1: Depreciation per technology, exploitation phase, 2009 (million euros, rounded)

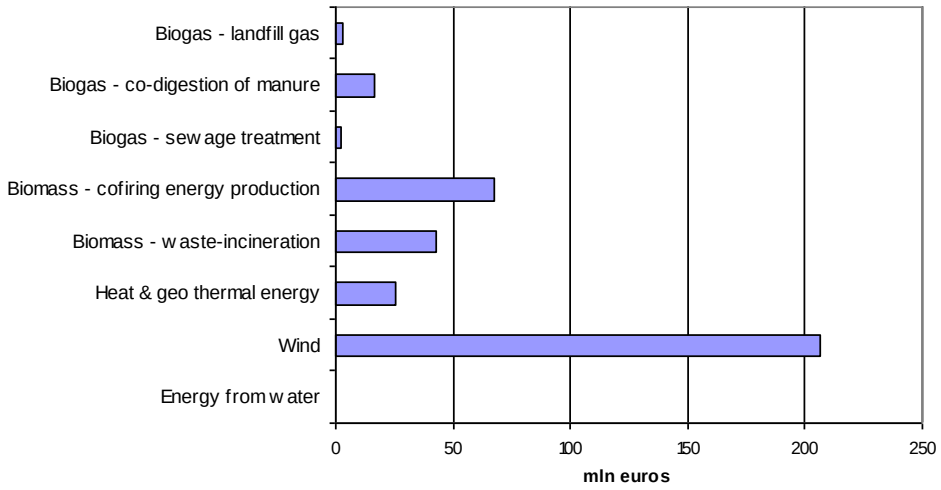


Figure 4.1 shows that the depreciation on wind technology represents over 50% of all depreciation costs while wind also represents over two thirds of the total E-SES capacity. Moreover, it is interesting to use the depreciation figures to calculate the net value added and investigate how profitable the various technologies are. This analysis will be the subject of section 4.

Because wind energy is such an important part of the E-SES it is interesting to zoom into it a bit. Figure 4.2 below presents the accumulation of capital in wind energy, both on water and land.

Figure 4.2: Fixed capital asset value (in million euros) over 1990-2010.

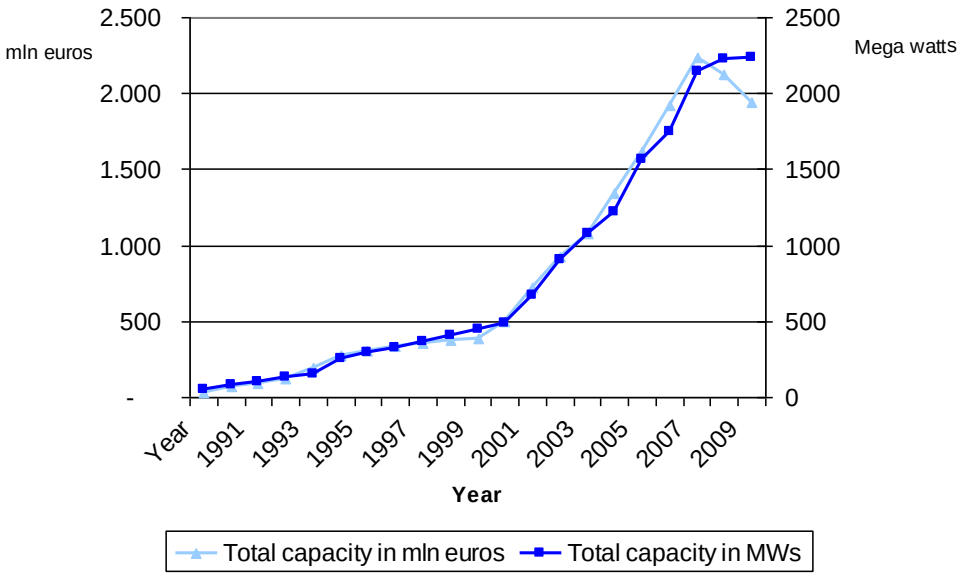


Figure 4.2 shows that the placement of newly installed capacity stagnated in 2008. It stagnated such that since that year depreciation outranged the value of newly placed capacity, implying that between 2008 and 2010 the total value of wind technology capacity has been decreasing.

4.3 Depreciation in the pre-exploitation phase

In the SES radar 2012 the activities of P-SES companies are broken down into product and process profiles. Table 4.2 presents figures for three groups. Firstly for specialised companies, which are fully dedicated to the production of sustainable energy goods and services, secondly to non-specialised companies and lastly to the complete P-SES.

Table 4.1: Net value added in the pre-exploitation phase, 2009 (million euros, rounded)

	Specialised	Non-specialised	Total
Gross Value Added	490	640	1,130
-/- Depreciation	110	70	180
= Net Value Added	380	570	950

Table 4.2 shows that the level of depreciation is relatively large for specialised companies. Figure 4.3 shows that the process profile 'Production of energy carriers' has a large depreciation number which results in a negative net value added. This process consists mostly of chemical companies active in bio fuel production (product). Other manufacturers (of e.g. machinery, insulation material) are included in 'Supply, assembly and construction'. Service industries, such as consultancy, mostly use human capital as main input for production. This explains the low level of depreciation.

Figure 4.3: Depreciation and net value added per process profile, pre-exploitation phase, 2009 (million euros, rounded)

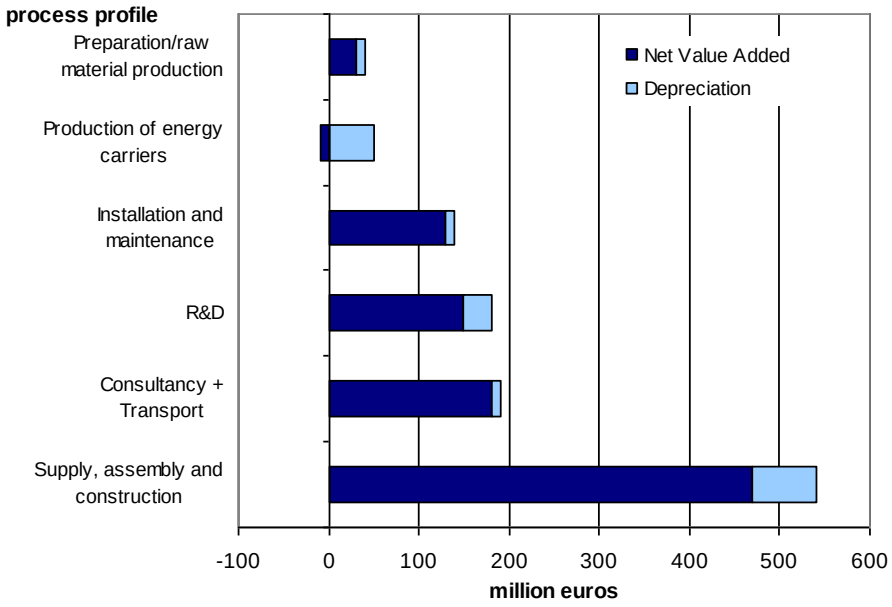


Table 4.2 presents the results for the product profiles distinguished in the pre exploitation phase. Energy saving is the most important value chain in both gross and net value added.

Table 4.2: Depreciation and value added per product profile the pre-exploitation phase in 2009 (million euros, rounded)

Product	Gross Value Added	Depreciation	Net Value Added
Solar	140	30	110
4. bio gas	30	0	30
5. bio mass (solid) & waste	50	10	40
6. bio fuels (incl bio fuel prod.)	100	60	40
7. bio refining	40	10	30
8. wind onshore	40	0	40
9. wind offshore	50	0	50
Heat & geo thermal energy /energy from water	160	10	150
12. energy saving	400	40	360
13. electric transport	40	0	40
Smart grids/ Hydrogen technology/ CO2 capture and storage	90	20	70
Total P-SES	1,130	180	950

4.4 Total depreciation in the sustainable energy sector in 2009

Section 4.2 and 4.3 present the depreciation figures for the E-SES and the P-SES. This section presents a comparison of the P-SES and the E-SES as well as the total figures for the complete SES by matching the technologies in the E-SES with their corresponding products in the P-SES. Figure 4.4 shows that in the exploitation phase the size of depreciation is relatively big compared to the pre-exploitation stage.

Figure 4.4: Production, gross value added and depreciation for the total SES in 2009

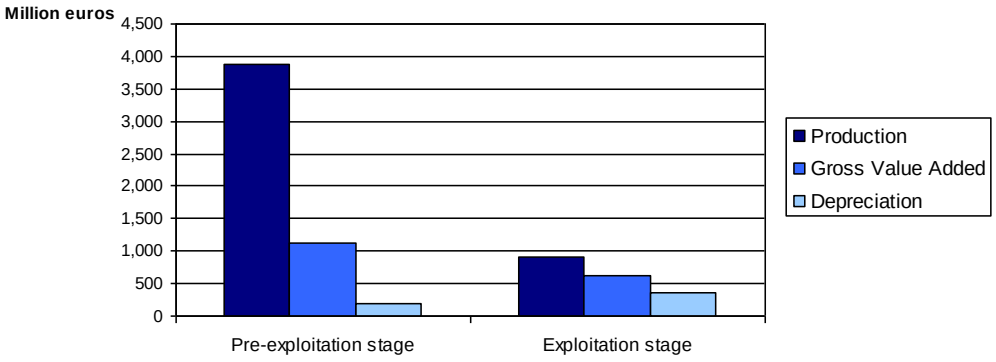


Figure 4.5 presents figures for gross value added[3] separated into depreciation and net value added figures, for the different technology/product categories. Their sum is equal to the gross value added.

[3] The gross value added figures of the E-SES that are used in the calculation are not in this addendum but can be found in table 3.4 of the SES radar 2012.

Figure 4.5: Net value added and depreciation for the total SES per profile/technology in 2009

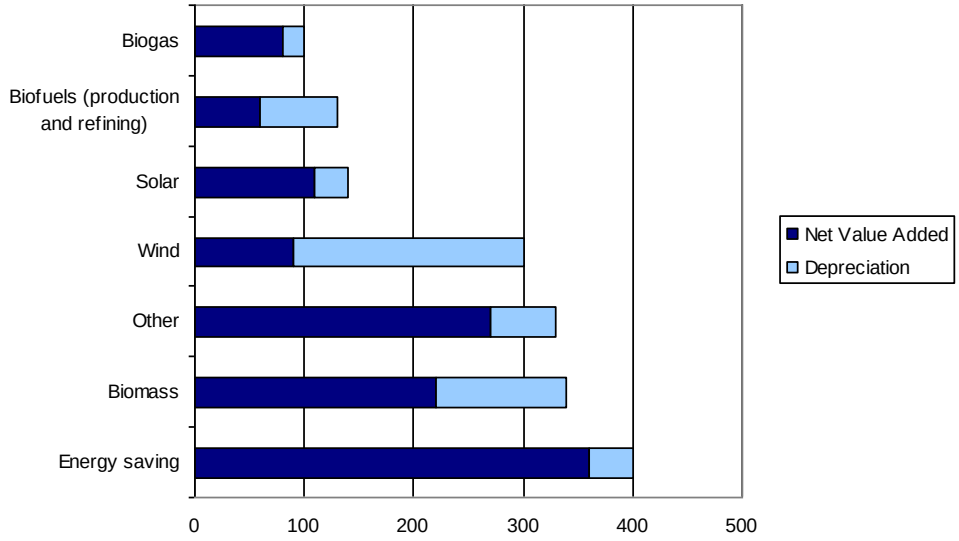
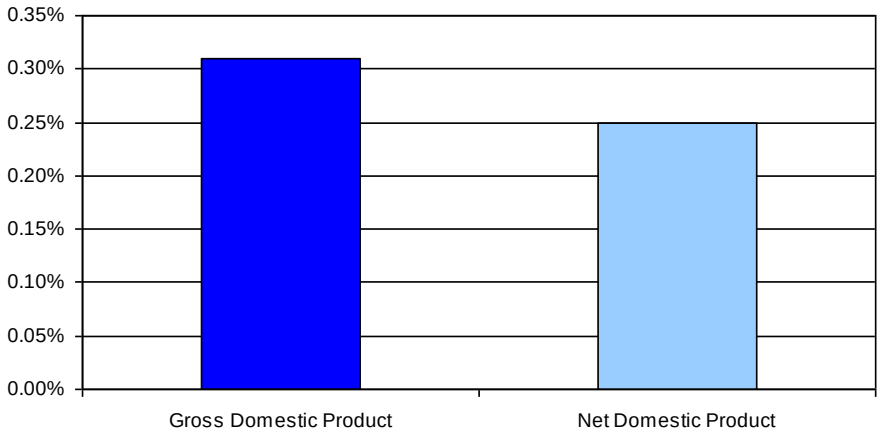


Figure 4.5 shows that for some technologies depreciation has substantial impact on its profitability. In particular the product profiles 'wind' and 'bio fuels' create gross value added that is largely affected by depreciation, while the profitability of energy saving is only slightly affected by depreciation. This indicates that wind energy is relatively capital intensive. Both the solar and energy saving profile include only pre-exploitation stage activities.

Figure 4.6: Contribution of the total SES to the Dutch economy in 2009



In 2009, net value added of the SES as a whole constituted 0.25 percent to the Dutch net domestic product (NDP). This contribution is smaller than the 0.31 percent it contributed to the Dutch GDP (see page 11 of the SES radar 2012) in the same year. This further strengthens the notion that the SES is a relatively capital intensive sector.

4.5 Conclusions

This section analysed the role of depreciation in the SES. It turns out that depreciation is relatively important for the activities of the SES. Total depreciation in the SES is equal to 570 million euros.

In fact, in 2009 the sector contributed 0.25 percent to the total Dutch NDP, while it contributed 0.31 percent to the total Dutch GDP. Furthermore, the analyses done show that there are substantial differences between the different technologies. Gross value added of both wind and bio fuel energy production (exploitation stage) are especially affected by depreciation.

5. Key messages and recommendations

This study mainly focuses on three main topics in the sustainable energy sector: Ultimate control, FDI and depreciation. This section presents a short summary of the additional figures developed in this study in conjunction with the already available key figures of the SES radar published in June 2012 (CBS, 2012). This study is still in the learning phase. Additionally this section contains some recommendations for further study focusing on Ultimate control, FDI and depreciation only.

5.1 Key messages

Figure 5.1: Main results of the SES radar

Key figures for Sustainable Energy Sector (SES)		2009	2010
%-change			
Employment [1]		4	4
Production		-7	na
Value added		2	na
Import of goods		3	na
Export of goods		22	na
Gross fixed capital formation:			
Demand side exploitation phase		-38	37
Pre-exploitation phase		12	na
Innovation (R&D expenditures per euro turnover, change 2008-2010)			20
	2008	**2009**	**2010**
absolute values			
Employment[2] (FTE, rounded)	16,000	16,700	17,400
Production (mln euro, rounded)	5,160	4,800	na
Gross Value added (mln euro, rounded)	1,710	1,750	na
-/- Depreciation (mln euro, rounded)		550	
= Net value added (mln euro, rounded)		1,210	
Import of goods (mln euro, rounded)	2,232	2,300	na
Export of goods (mln euro, rounded)	1,806	2,200	na
Gross capital formation:			
Demand side exploitation phase (mln euro, rounded)[3]	1,400	870	1,190
Investments pre-exploitation phase	234	261	na
Foreign controlled companies (Share in gross value added P-SES, %)		37	
Innovation (R&D expenditures per euro turnover[4], %)	2.0	na	2.4

[1] 2010 growth figure for P-SES equal to 5 percent

[2] Includes only employees on the payroll of SES companies. Employees hired from temp. agencies are not included

[3] Includes only projects reported to the EIA scheme, based on financial reports by A-NL

[4] 2008 figure has changed compared to previous Radar results because of comparabilty reasons. This figure includes only companies of ten or more employees. Figures only representative for medium-sized and large companies

- Employment growth of the sustainable energy sector, measured in FTE's, in 2009 and 2010 was equal to approximately 4 percent. Total Dutch employment decreased in the period 2008-2010. As a consequence, the share of employment of the sustainable energy sector in total employment grew over time to 0.26 percent in 2010.

- Contribution of the SES to GDP has been growing to 0.31 percent in 2009. As depreciation is relatively large the contribution to net domestic product is smaller, 0.25 percent.

- While production decreased between 2008 and 2009, both employment and value added grew in the same period. An explanation for this paradox may be the long-term expectations of companies. Some companies in the pre-exploitation phase of the sustainable energy industry may have opted to hold on to staff. Positive long-term prospects partly explain these ambiguous developments.

- Gross value added growth of two percent is solely the result of more value added in the exploitation phase (energy production) of the sector. Pre-exploitation phase encountered a negative development in gross value added.

- Production in the exploitation phase is relatively capital intensive and therefore depreciation is relatively large compared to the pre-exploitation phase.

-One third of all employees in the pre-exploitation phase of the SES are employed in foreign controlled companies. For all employees in the Netherlands this figure is approximately 15 percent (excluding financial sector). So the pre-exploitation phase of the sustainable energy sector is more than average controlled by foreign companies.

5.2 Recommendations

This study mainly focuses on three main topics: Ultimate control, FDI and depreciation)

A study of changes in the structure of ultimate control over time is relevant in the P-SES. Therefore we recommend repeating an ultimate control analysis every three years. So far it was only feasible to compile statistics for the pre-exploitation phase only. If one would like to analyse control structures in the exploitation phase as well, it is recommended to construct a micro-database of companies engaged in the exploitation phase in the near future.

In the case of figures on foreign direct investments, further research is only opportune when new data sources become available or when a customized survey for the SES is developed. The latter will introduce an additional administrative burden for the companies in the SES.

As depreciation is related to fixed capital formed over many years, annual changes in depreciation are generally small. Therefore an interval of three years allows for meaningful monitoring of depreciation figures. Compiling information on depreciation once every 3 years is recommended.

Recommendations for further analysis are studying the relationships and partnerships of companies within the SES. Also the relationships of companies in the Topsector Energy and companies in other Topsectors defined by the Ministry of Economic Affairs (EZ) are of interest.

The analysis on international ultimate control (chapter 2) can possibly be extended to figures for specific product profiles in the SES. Such a detailed analysis is at this moment limited by confidentiality regulations of Statistics Netherlands but future growth of the population of companies may result in new opportunities for detailed analysis.

Annex A: References

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