

Green transition can create thousands of new jobs

In collaboration, The Economic Council of the Labour Movement (ECLM) and United Federation of Danish Workers (3F) have prepared an assessment of the potential for green jobs in Denmark. The analysis calculates the job effects that can be achieved from a number of different projects. It calculates the effects of 12 concrete projects, including establishing four waste sorting plants, establishing biorefineries, establishing a number of different wind turbine farms, energy upgrades, replacing gas-fired and oil-fired boilers with heat pumps, extending the district heating network and 120 biogas plants etc. The individual projects are shown in box 1 and the data on which the calculations are based have been analysed in the appendix.

Box 1. 12 green projects

Establishing 4 waste sorting plants, establishing 2 biorefineries, establishing 2.4 GW offshore wind turbines, establishing additional 1.8 GW offshore wind turbines, establishing 2,300 MW onshore wind turbines, dismantling of onshore wind turbines, energy upgrades of private houses, replacing oil-fired and gas-fired boilers, extending the district heating network, increased exports of district heating, increased exports of water technology and establishing biogas plants.

The total price for all the projects is estimated to be DKK 280 b. This will provide temporary additional employment of 380,000 full-time equivalents (FTEs) - defined as one job for one year. Table 1 shows full-time equivalents and the price for the green projects.

Table 1. Full-time equivalents and price for green projects

	FTEs	DKK billion
The green projects	380	280

Note: The individual projects and associated calculations are described in the appendix. The prices are 2015 prices as the basis is input-output data from 2015 as these were the last available data when the calculations were started. The two projects with entirely permanent effects have not been included in this table.

Source: ECLM based on Statistics Denmark, 3F, the Danish Energy Agency, the Danish Building Research Institute, the Danish District Heating Association, WindEurope and the Danish Agriculture & Food Council.

The potential for green jobs is calculated as the additional number of jobs that will be created through the implementation of these specific projects. The additional employment can be divided into temporary and permanent jobs. Temporary jobs refer to those that e.g. deal with new plants, while permanent jobs may deal with the subsequent operation of the plant. Table 2 shows the potential for green jobs in Denmark.

These projects have the potential to create approx. 35,000 jobs per year over 5 years (see Table 2), while approx. 32,000 jobs will exist for a full 10 years. After this, there will remain temporary green jobs that will gradually decline over a 30-year period.

It should be noted however, that the projects handling the replacement of oil and gas-fired boilers with heat pumps, and the expansion of the district heating network will likely have some overlap, and therefore cannot both be carried out at full-scale which will lessen the overall potential.

In overall terms, the projects have the potential to create around 17,000 permanent jobs. These jobs relate to the operation of the plants and increased exports of green technologies.

Table 2. Potential for green jobs, persons annually

	Temporary employment	Duration	Permanent employment
Establishing 4 waste sorting plants	130	5 years	130
Establishing 2 biorefineries	1,240	5 years	400
Establishing 2.4 GW offshore wind turbines	2,200	10 years	550
Establishing 1.8 GW offshore wind turbines	1,650	10 years	410
Establishing 2,300 MW onshore wind turbines	950	10 years	530
Dismantling of onshore wind turbines	10	10 years	---
Energy renovation of private housing	1,890	30 years	---
Oil and gas-fired boiler replacement	9,900	10 years	---
Expansion of district heating	15,330	10 years	---
Increased district heating exports	---	7 years	5,890
Increased export of water technology	---	7 years	7,040
Establishing of biogas facilities	1,970	8 years	1,800
Total (maximum) for 5 years	35,270		
Total (maximum) for 10 years	31,930		
Total - permanent			16,750

Note: Employment is rounded to the nearest 10. Please note that the replacing of oil-fired and gas-fired boilers and the expansion of the district heating network are overlapping projects, and the full effect therefore cannot be expected if both projects are implemented. The individual projects and associated calculations are described in the appendix.

Source: ECLM based on Statistics Denmark, 3F, the Danish Energy Agency, DONG, the Danish Building Research Institute, the Danish District Heating Association, COWI, WindEurope, Vandvision, the Danish Agriculture & Food Council and Danish Economic Councils.

Box 2. Assumptions behind the calculations

The calculations are based on input-output calculations on the basis of Statistics Denmark's IO tables for 2015. They are based on various assessments of the external costs of the project. You can find more information about the individual projects in the appendix.

Both temporary and permanent employment is inclusive of indirect effects of the project. E.g. when establishing wind turbines, input from the metal industry is required, which in turn requires input from the wholesale trade, thus a project creates activity indirectly in other sectors. No derivative effects on the economy has been included. The derived effects come about when the increased income generated by the projects translate to higher private consumption, which if they had been included, would have resulted in higher demand and consequently higher employment. Nor has it been taken into account that increased turnover may require increased investment in order to have sufficient capital available. Likewise, the funding of the projects has not been accounted for, nor how the overall employment is affected.

For the majority of the projects, there is no fixed profile for when investments are made during the project, and therefore no fixed profile for when the jobs arise. It is therefore assumed that the investments - and subsequent employment - are equally distributed throughout the duration of the project. It is not certain that this profile will be the most appropriate or cost-effective, and as such it should be seen solely as a technical calculation assumption.

If we suppose that all projects were to be completed within 5 years, this would generate 76,000 temporary jobs annually. If all projects were to be completed within 10 years, this would provide annual temporary employment of 38,000 jobs, while the annual temporary employment would be approx. 12,500 jobs if all the projects had a duration time of 30 years.

The calculations are an updating of the note "Potentialet for grønne job i Danmark" (The potential for green jobs in Denmark) from 2015: <https://www.groennejob.dk/-/media/files/theme/groennejob/notat-arbejderbevaegelsens-erhvervsraad.pdf>

The building and construction sector has great potential for more green jobs

Below we have looked at the industries in which temporary jobs are expected to be created. This is shown in Table 3. The assessment shows that in total up to 380,000 FTEs (defined as one job over one year) can be created by completing the ten projects that involve temporary employment.

The vast majority of jobs are created in the building and construction sector. This is to be expected since the projects are construction or renovation projects, and all direct employment is therefore related to these areas. However, there is also significant employment potential in both the service sector (over 75,000 FTEs) and in the industrial sector (approx.50,000 FTEs). Table 3 shows the potential for green jobs distributed per sector.

We note that this refers to total employment - measured in FTEs - and should be distributed (unevenly) over 30 years; the length of the longest-lasting project.

Table 3. Potential for green jobs in sectors, total temporary employment in full time equivalents

	Agriculture, etc.	Building and construction	Manufacturing	Service	Total
Establishing 4 waste sorting plants	0	310	110	220	640
Establishing 2 biorefineries	50	2,980	1,040	2,150	6,220
Establishing 2.4 GW offshore wind turbines	200	2,110	11,650	8,060	22,020
Establishing 1.8 GW offshore wind turbines	150	1,580	8,740	6,050	16,520
Establishing 2,300 MW onshore wind turbines	90	910	5,040	3,480	9,520
Dismantling of onshore wind turbines	0	40	10	30	80
Energy renovation of private housing	210	43,220	3,750	9,510	56,690
Oil and gas-fired boiler replacement	370	75,500	6,540	16,610	99,020
Expansion of district heating	0	118,220	10,160	24,960	153,340
Establishing of biogas facilities	120	7550	2640	5440	15,750
Total (maximum)	1,190	252,420	49,680	76,510	379,800

Note: Agriculture etc., covers the agriculture, forestry and fishing sectors, as well as raw material extraction and utilities. Service covers both private and public service. Employment is rounded to the nearest 10. The individual projects and associated calculations are described in the appendix.

Source: ECLM based on Statistics Denmark, 3F, the Danish Energy Agency, the Danish Building Research Institute, the Danish District Heating Association, WindEurope and the Danish Agriculture & Food Council.

Almost every 5th green job is a 3F job

Furthermore, it is estimated how many 3F jobs will be created through the implementation of these projects. This is shown in Table 4. The number of 3F jobs is calculated by assuming that the proportion of 3F jobs in each sector are the same before and after the completion of the project. So, if 50% of the jobs in one given sector are 3F jobs, then 50% of the new jobs in that sector will also be 3F jobs. The proportion of 3F jobs is initially calculated by the number of employed members of 3F's a-kasse (unemployment insurance fund) in the specific sector, divided by the total employment in the sector.¹

In overall terms, the projects are estimated to result in approx. 72,000 3F FTEs that are to be distributed over the 30 years of the longest lasting project. According to the same profile conditions as in Table 2 this will result in approx. 6,700 temporary 3F jobs for 5 years, of which 6,100 jobs will exist for as much as 10 years. Thereafter a number of temporary green 3F jobs will remain, which will gradually decline over a 30-year period. Overall, this is equivalent to just below every fifth job created representing a 3F job.

¹RAS employment is based upon DB07 codes. It is assumed that the proportion of employment for 3F members is the same for RAS (register-based labour force statistics) and NR (annual national accounts) employment. For employment in the building and construction sector, the proportion is taken from construction employment statistics.

Table 4. Potential for green jobs, 3F jobs, persons annually

	Temporary employment	Duration
Establishing 4 waste sorting plants	20	5 years
Establishing 2 biorefineries	220	5 years
Establishing 2.4 GW offshore wind turbines	360	10 years
Establishing 1.8 GW offshore wind turbines	270	10 years
Establishing 2,300 MW onshore wind turbines	160	10 years
Dismantling of onshore wind turbines	0	10 years
Energy renovation of private housing	370	30 years
Oil and gas-fired boiler replacement	1,930	10 years
Expansion of district heating	3,010	10 years
Establishing of biogas facilities	350	8 years
Number of FTEs in total (maximum)	72,300	
Total (maximum) for 10 years	6,100	
Total (maximum) for 5 years	6,690	

Note: Employment is rounded to the nearest 10. Please note that the replacing of oil-fired and gas-fired boilers and the expansion of the district heating network are overlapping projects, and the full effect therefore cannot be expected if both projects are implemented. The individual projects and associated calculations are described in the appendix.

Source: ECLM based on Statistics Denmark, 3F, the Danish Energy Agency, the Danish Building Research Institute, the Danish District Heating Association, WindEurope and the Danish Agriculture & Food Council.

Box 3 contains a survey of the projects with statements of the status of the projects. All the projects, with the exception of energy upgrades of private houses, could be completed by 2030 if they are decided on today.

Box 3. Status of the projects

Status of the 12 different projects

Project	Decided	Expected (but not planned)	Potential projects
Establishing 4 waste sorting plants			X
Establishing 2 biorefineries			X
Establishing 2.4 GW offshore wind turbines	X		
Establishing 1.8 GW offshore wind turbines			X
Establishing 2,300 MW onshore wind turbines		X	
Dismantling of onshore wind turbines		X	
Energy renovation of private housing			X
Oil and gas-fired boiler replacement			X
Expansion of district heating			X
Establishing of biogas facilities		X	
Establishing 4 waste sorting plants			X
Establishing 2 biorefineries			X

Source: ECLM based on 3F, the Danish Energy Agency, the Danish Building Research Institute, the Danish District Heating Association, COWI and Vandvision

Appendix. The individual projects and the associated prerequisites

In the following section, the 12 different projects are described along with the associated calculated prerequisites.

Establishing 4 waste sorting plants

3F would like to see four waste sorting plants built in Denmark, at around DKK 150-200 million per piece. This corresponds to a total investment of DKK 700 million in 2013 prices. As this note is based on input-output data from 2015, as these were the last available data when the calculations were commenced, the figures should be converted into 2015 prices. This is done on the basis of the price index for building and construction investments in private enterprise (excluding housing) from ADAM.²

The total employment effect (direct and indirect) will therefore be 640 FTEs. 3F would like the waste sorting plants to be built over 5 years, which corresponds to just under 130 jobs annually. Of the 130 jobs, approx. 20 are estimated to be 3F jobs.

3F estimates that the four waste sorting plants will result in the permanent employment of 100 persons, who will service the plants during their operation. It is assumed that these will be in the professional repair and maintenance sector, which is a sub-sector of building and construction. In this sector, 0.317 indirect jobs will be created for every direct job.³ In this case, this corresponds to the creation of another 30 jobs, therefore bringing the total number of permanent jobs to 130. Alternatively, the operation could be within repair and installation of machinery, etc., which is a sub-sector of manufacturing. This would provide just under 40 jobs, making the total number of permanent jobs 140 - about the same.

Establishment of two biorefineries

3F would also like to see two biorefineries established in Denmark at the Maabjerg Energy Centre (MEC). The Danish Agriculture and Food Council⁴ indicate that such a plant will cost DKK 3.4 billion in 2012-prices to establish. To establish two plants will therefore cost DKK 6.8 billion in 2012-prices. Here, the same price index is used as for the waste sorting plants to convert to 2015 prices.

The total employment effect (direct and indirect) will be around 6,200 FTEs. It is assumed that the plants will be built over 5 years, at which the annual effect will be just below 1,250 jobs. Approx. 220 of these are estimated to be 3F jobs.

In operation, The Danish Agriculture and Food Council estimate that one plant will employ 200 persons, covering both the direct and indirect effect. For two plants, the permanent employment figures double in size, corresponding to 400 jobs.

Establishing 2.4 GW offshore wind turbines before 2030

In accordance with the 2018 Energy Agreement, it has been decided that three 800 MW offshore wind farms will be tendered before 2030. An installation cost of 1.818 million EUR pr. MW, in 2018-prices, is expected. This cost assessment is taken from WindEurope.⁵ It is converted to DKK by multiplying by 7.5. This gives a total cost for the 2.4 GW of DKK 32.7 billion, in 2018-prices. The same price index is used for conversion as in the above projects. The shock is distributed across construction and the manufacture of engines, wind turbines. It is assumed that the same proportion as for onshore wind turbines (see below) is construction and the rest is manufacture of wind turbines.

The calculations have been made on the assumption that both the final production of the wind turbines and the installation of the wind turbines will be carried out in Denmark. Input for the final production will be both Danish production and imports.

The total employment effect (direct and indirect) is around 22,000 FTEs. This is an upper estimate, as it has been assumed that all wind turbines are produced in Denmark. Spread over the ten years up to

² The name of the variable is pibp. The conversion provides a slightly lesser shock in 2015, since the prices decreased a little between 2013 and 2015. The shock is put in the construction sector, in the input-output calculation.

³ Statbank table BEKSMUL1, Type 1 multiplier.

⁴ Landbrug og Fødevarer: Samfundsøkonomiske konsekvenser af bioenergiproduktion i Måbjerg. July 2012

⁵ <https://www.windpoweroffshore.com/article/1525362/europes-offshore-wind-costs-falling-steeply>

2030, this provides an annual employment of 2,200 jobs. Of the 2,200 jobs, approx. 350 are estimated to be 3F jobs.

In operation, it is assumed that one 400 MW wind farm will employ 70 persons directly. This estimate is based on DONG's assessment that the operation and maintenance of the Anholt wind farm of 400 MW employs 70-100 persons. This means that the direct employment here is 420 persons. In addition, indirect employment is applied with the same multiplier as that of the waste sorting project. The permanent employment figure thus reaches a total of 550 persons.

Establishing 1.8 GW offshore wind turbines

A private company wishes to build offshore wind turbines with 1.8 GW capacity. ⁶ It is assumed that this will be on an equivalent timeline as the other 2.4 GW offshore wind turbines. Therefore, all results from the 2.4 GWs are multiplied by $\frac{3}{4}$, thus obtaining the results from Tables 1, 2 and 3.

The total employment effect (direct and indirect) will therefore be approx. 16,500 FTEs. If they are distributed over the 10 years until 2030, this will provide 1,650 jobs annually. Of these 1,650 jobs, 270 are expected to be 3F jobs.

When put into operation, the wind turbines are expected to provide about 410 jobs annually according to the same calculation principle as above.

Establishing 2,300 MW onshore wind turbines

The Danish Energy Agency's basic projection forecasts that there will be approx. 2,300 MW onshore wind turbines erected from 2020 until 2029. The installation costs are taken from the Danish Energy Agency's Technology Catalogue.⁷ Here the actual price of the wind turbine is calculated to be 690,000 2017-EUR/MW, while the construction cost is a further 113,000 2017-EUR/MW. This gives a total project price of DKK 13.9 billion in 2017-prices. This is converted into 2015 prices, as above. The shock is applied in the proportion 690/803 in the manufacture of wind turbines and 113/803 in construction.

The total employment effect (direct and indirect) then comes to 9,500 FTEs, spread over a 10-year period providing approx. 950 jobs annually. Approx. 150 of these are estimated to be 3F jobs.

Assuming the same employment (direct and indirect) in operation per. MW as for offshore wind turbines, permanent employment can be obtained for 530 persons.

Dismantling of onshore wind turbines

By 2030 a number of wind turbines will have to be taken down due to being too old. The Danish Energy Agency expects (see above), that 2,300 MW new onshore wind turbines will be erected. During the same period however, the installed capacity will only increase by approx. 500 MW, according to the basic projection. Therefore, it is expected that 1,800 MW capacity must be dismantled between 2020 and 2030. ⁸ The dismantling costs are expected to be DKK 50,000/MW in 2017 prices ⁹, corresponding to a total cost of DKK 90 m in 2017 prices. This is converted into 2015 prices, as above, and is applied to the construction sector, as above.

The total employment effect (direct and indirect) then comes to approx. 80 FTEs, equal to approx. 8 per year over a period of 10 years. The number of 3F jobs is modest and therefore has not been calculated.

Energy renovation of private housing

The Danish Building Research Institute (SBI) estimated in 2017 that it would cost 40.6 billion DKK to renovate old buildings to bring them up to today's building regulation standards with respect to insulation, etc. ¹⁰ It is noted here, however, that this 40.6 billion DKK is only the cost if renovation takes place

⁶https://ing.dk/artikel/18-gw-enkelt-selskab-vil-fordoble-dansk-havmoelle-kapacitet-229477?utm_source=nyhedsbrev&utm_medium=email&utm_campaign=ing_daglig

⁷ From August 2016, updated October 2019. pg. 175

⁸ Energinet.dk: *Analyse: Nedtagning af gamle landmøller*. May 2016.

⁹ This is taken from an offer on Lindø Vindmøllelaug, where it is assumed that the dismantling costs will be 500,000 DKK for 10 MW wind turbines.

¹⁰ SBI: *Varmebesparelser i eksisterende bygninger. Potentiale og økonomi*. SBI 2017:16

at the same time as other renovations, where they estimate a need for 727 billion DKK. It is estimated that this can be done by 2050, corresponding to a renovation period of 30 years. The same price index is used to convert to 2015 prices as above. The investment is put into the professional repair and maintenance sector.

In the case of a full renovation, i.e., the green including the additional renovations, it would create more than 1 million FTEs, which would be distributed over a 30-year period. By comparison, the total production value in the sector of professional repairs and maintenance in 2015 was just under DKK 80 b in 2015 prices, and the total employment, including leave of absence, was 87,700 persons.

The total employment generated from the energy renovation (i.e. the 40.6 billion DKK in 2017-prices), is just below 57,000 FTEs, which includes both direct and indirect jobs. Spread over 30 years, this comes to just below 1,900 jobs annually. It is estimated that just below 400 of these will be 3F jobs. The energy renovation is not expected to lead to permanent employment opportunities.

Replacing 500,000 gas and oil-fired boilers with heat pumps over 10 years

The Danish District Heating Association aims to replace 500,000 gas and oil boilers before 2030, just as the 2018 Energy Agreement aims to scrap all oil-fired boilers currently used in Danish homes. It is noted here however, that the Danish Energy Agency's latest projection still expects that 1-2 pct. of Danish homes will be heated with oil-fired boilers in 2030, meaning fewer replaced boiler systems.

It is assumed that the installation costs for a ground source heat pump equal 125,000 DKK in 2009 prices.¹¹ This gives a total investment figure of 62.5 billion DKK in 2009-prices. The figures are also here converted into 2015 prices with the same price index as above, and the shock has been applied to the professional repairs and maintenance sector.

The total employment (direct and indirect) comes to almost 100,000 FTEs. Spread over a 10-year period, this provides almost 10,000 jobs annually. Of these 10,000 jobs, it is estimated that almost 2,000 will represent 3F jobs. This is likely to be an upper estimate, as the vast majority of jobs are found in professional repair and maintenance. In this sector the 3F share is just over 20 pct. However, the replacement of gas and oil-fired boilers will likely be carried out by electricians and plumbers. Within electrical installation, 3F members represent approx. 2 pct., while plumbing and heating businesses represent just over 3 pct.

The replacement of oil and gas-fired boilers is not estimated to lead to permanent employment opportunities.

We note here that this project has some overlap with the next project, which is why the full effect of both cannot be expected if both projects are carried out.

Expansion of district heating over 10 years

A scenario is also considered in which the district heating network is expanded so that 65 pct. of the total heat consumption in Denmark will be covered by district heating, and a further 5 pct. of the total heat consumption will be covered by individual heat pumps. In 2008 the figure was 46 pct., but 60 pct. for housing. The scenario is described in the Danish District Heating Association's Heating Plan Denmark from October 2008. It is assumed that the expansion will continue at the same rate over the full 10 years. Therefore, it is calculated only for a single year and the effect is then assumed to apply for 10 years. The installation cost is 10.079 billion 2010-DKK., which is placed in construction, after being converted to 2015 prices (see above).

Overall, the expansion of district heating provides increased employment (direct and indirect) of over 15,000 persons each year, over a 10-year period. Approx. 3,000 of these are estimated to be 3F jobs.

We note here that this project has some overlap with the previous project, which is why the full effect of both cannot be expected if both are carried out.

¹¹ 3F: Green Jobs. 2009.

Box. Increased district heating will reduce the consumption of other fuels

The increased district heating consumption will reduce the consumption of other fuels. Overall, fuel consumption will be reduced by 3.026 billion 2010-DKK. We assume that inputs will be reduced proportionally from the various sectors supplying the private consumption of the various fuels. Consumption of gas will be reduced by 1.046 billion 2010-DKK., and consumption of liquid fuels will be reduced by 1.14 billion 2010-DKK. In addition, a further 0.84 billion 2010-DKK will be deducted from liquid fuels, as biomass is reduced with this number and biomass is not included as an independent fuel consumption component in the input-output tables.

The fact that input is proportionally reduced from the various sectors supplying private fuel consumption, means that the decrease in liquid fuel consumption will not have a significant effect on Danish production. This is due to the fact that the vast majority of liquid fuel consumption is imported or taxes and charges. The consumption shock is converted to 2015 prices using the ADAM fuel price index.

Increased district heating exports

District heating exports are expected to increase in the coming years. In 2018, district heating exports were at 6.77 billion DKK.¹² An analysis from 2016¹³ estimated that district heating exports in 2025 would be 10.7 billion DKK in 2016-prices.

District heating exports in 2018 are amended to 2016 prices using the price index from the exports.¹⁴ Therefore, the growth from 2018 to 2025 corresponds to an increase of 57 pct. Taking into account productivity increases until 2025¹⁵, employment growth will be 42.5 pct.

In 2018 there were 10,371 people employed in the district heating sector (see the Danish District Heating Association's Industry and Export Statistics, 2019) These jobs are distributed over 117 sectors using the Industry and Export Statistics, pg. 7. Thereafter, employment is scaled up in the 10 sectors listed so that the total employment figure reaches 10,371 persons. Thereafter employment in all sectors is assumed to grow by 42.5 pct., except for heating provision. It is assumed that employment within heating provision will not change as a result of increased district heating exports, as this should not directly affect the demand for district heating in Denmark. This has a direct effect on employment of just under 3,600 persons.

The COWI analysis, which has estimated district heating exports for 2025, estimated that employment in the district heating industry will increase by 2,400 persons. That is somewhat lower than the 3,600-figure found in this analysis. A proportion (900 persons) can be explained by the fact that this analysis has been carried out in the district heating sector, where advisory services must also be accounted for. In addition to the direct employment effect in this analysis of 3,600 persons, there is also that of indirect employment. This is calculated at the industry level, so that each sector that directly employs an additional person also has an indirect sector-specific employment effect.¹⁶ This provides an additional 2,300 indirect jobs, corresponding to a mean multiplier of 1.64. Overall the increased district heating exports directly and indirectly create around 5,900 jobs.

Doubling the export of water technology

A doubling of water technology exports should generate 4,000 direct jobs. This is shown in VANDVISION 2025.¹⁷ The indirect employment is calculated by assuming that each direct job creates 0.76 indirect jobs. This is the mean multiplier for all sectors.¹⁸

It is not possible to calculate sector employment for this project, as there is no further statistical information provided by VANDVISION 2025

¹² <https://www.danskfjernvarme.dk/viden/statistik-subsection/branche-og-eksportstatistik/2019>

¹³ COWI: *Branchens forventninger til eksportpotentialet inden for fjernvarme og fjernkøling*. June 2016.

¹⁴ pe in ADAM

¹⁵ Growth in hourly productivity is used for the private urban industries from DØR E19 from 2018 to 2025.

¹⁶ Statbank Table BEKSMUL1, Type I multiplier.

¹⁷ www.vandvision.dk

¹⁸ Statbank Table BEKSMUL1, Type I multiplier.

120 biogas plants

3F would like to see 120 major biogas plants established over an eight-year period, i.e. 15 per year. The total construction cost is estimated at DKK 17.2 b at 2013 prices.¹⁹ The shock is converted to 2015 prices just as for the waste sorting plants and applied to the construction sector.

The total employment effect (direct and indirect) comes to almost 16,000 jobs, corresponding to just below 2,000 jobs a year over eight years. Approx. 350 of these are estimated to be 3F jobs.

Denmark's largest biogas plant is expected to provide jobs for 15 persons both directly and indirectly²⁰, 120 plants will, with the same employment effect, generate 1,800 permanent jobs.

¹⁹ Calculated by ECLM, September 2014.

²⁰ <https://jv.dk/artikel/danmarks-st%C3%B8rste-biogasanl%C3%A6g-klar-ved-korskro-i-2018>