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National Case Studies on the Implementation of the Recovery and Resilience Plans of the Next Generation EU Funds 2024: The Case of Denmark

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Abstract

The Danish RRP is defined overwhelmingly in terms of the green transition and, to a smaller extent, digitalization. The third pillar is the health system.

The exact figures on the use of funds as per the seven policy areas and 37 investments or reforms are difficult to come by as there is no direct link between the performance-based milestones or targets being fulfilled and disbursements. Research and development in green technologies is a major policy area. Within this, four mission-driven public-private partnerships with altogether 300 partners, including universities, small and big businesses, institutes, foundations and NGOs stand out. A green tax reform for industry that on the one hand imposes a CO2 tax of some consequence – albeit in the longer term – and on the other hand and in the short term gives tax benefits to ease the transition costs, is a direct result of the work of an expert team funded under the Plan. Tax reform costs are also funded under the Danish RPP. Within the policy area of energy efficiency, the study of CCUS[1] potential looms large. Bicycle infrastructure has received a boost and besides, road pricing, car sharing and green ferry transport will be supported, so far only modestly as per available data. In the health sector, the study of covid vaccine effects, procurement of critical drugs and telemedicine can be mentioned. A broadband pool has helped to ensure the rollout of fast-speed internet to remote areas, particularly small islands.

So far, 43 out of 79 measures (milestones and targets) have been fulfilled in order to receive the first and second payments. Altogether EUR 925 million, more than half of the approved amounts, have been disbursed under the RRP, including the prepayment. The original amount of EUR 1.557 billion – all of it grant money - was reduced to EUR 1.432 billion but afterwards EUR 193 million were added through REPower EU funds, supporting windmill rollout, district heating, CCUS and a new initiative in green education.

The next steps are now being taken and green investments are being made, both funded by different government-backed green funds (and in turn to some extent also backed by the expanded Danish RRP) and the private sector.

The Plan is implemented to the satisfaction of the major players in the country, particularly the business sector, universities, various organisations, government departments and agencies as well as trade unions. No doubt it has given seed money to a lot of innovative research within PtX, CCUS, climate-friendly agriculture and organic farming. The stakeholders express some dissatisfaction regarding the lack of clarity of the procedures to follow and wish to speed them up although the DRRP has helped set things in motion more quickly than if it had just been a government program.

[1] CCUS = Carbon capture, utilization and storage.

Participants at a conference saw the RRP in the light of a necessary European response to the US Inflation Reduction Act and the need for support to remain competitive. In fact, the New Industrial Policy is already underway in Denmark - as testified by the considerable amount of public funding provided for the investments made subsequently to the research and development in the green transition.

The overall mood is one of optimism about Danish export potential in green technologies and it is even articulated that Denmark could become the 'world leader' in CCUS.

Introduction

The Danish RRP has lived a rather obscure existence in the mind of the public. Little has been written about it in the press, notably because the initiatives – if mentioned - are attributed to the government. But this does not preclude that it has impact.

This report lays out the financial implementation and performance indicators for the 37 programs (5 reforms and 32 investment streams) within the seven policy domains or components of the original plan. New funding has been added for an eighth component with 4 new investment streams. The impact so far is assessed as well as the reception of the RRP by the various stakeholders, including trade unions. They seem to be content, not least because of the prosperous export opportunities that will be opened by the very advanced technologies that are being developed, particularly CCUS and PtX. The reforms and investments undertaken are not particularly 'neoliberal', rather they inaugurate the New Industrial Policy in Denmark. As the government finances are in a solid surplus, there is not much discussion of the SGP. The social dimension is only minimally affected by the RRP, but there is a consistent call for conserving or creating jobs. Criticism could well be directed at the corporate character of the Plan as well as the lack of popular involvement or even knowledge of it.

Financial Implementation and Performance

EU allocations and disbursements of EU funds

The EU has defined six pillars for the national RRPs. They are:

1. Green transition
2. Digital transformation
3. Smart, sustainable and inclusive growth
4. Social and territorial cohesion
5. Health and economic, social and institutional resilience increasing crisis preparedness
6. Policies for the next generation.

Under this, Denmark defined seven policy domains, overwhelmingly falling into pillars 1, 2 and 5.

1.	Healthcare	EUR 32.8 million
2.	Agriculture and environment	EUR 177.2 million
3.	Energy efficiency	EUR 273.8 million
4.	Green tax reform	EUR 524.2 million
5.	Road transport	EUR 218.1 million
6.	Digitalisation	EUR 89.3 million
7.	Green R & D	EUR 241.6 million

Total	EUR1557.0 million

In 2022 the amount was revised downward to EUR 1.429 billion. At the end of 2023 new resources were added from REPower funds (EUR 131 million in grants) and from the Brexit Adjustment Reserve (EUR 66 million), altogether EUR 197 million, which brought the total grant amount to EUR 1.626 billion. Including national resources, overwhelmingly due to state budget compensation for the reduced amount, the total value of the plan amounts to EUR 1.812 billion.[2]

The prefinancing payment took place on the 2nd of September 2021 to the tune of EUR 202 million (DKK 1.5 billion). The first performance-based payment was released on April 27, 2023 in the amount of EUR 301 million (DKK 2.23 billion) following the request submitted on December 16, 2022. A second disbursement request for EUR 422 million (DKK 3.15 billion) was submitted on December 21, 2023 and disbursed some months later. Including a prepayment on the REPower funds of EUR 39 million, Denmark has received a total of EUR 964 million at the time of the second payment, net of deduction of part of the prepayments on both RRP and REPower funds.

Whereas the original plan entailed that 60 % was for the green transition, 25 % for digitalisation and 16 % other, this has been adjusted to 64 % climate and 21 % digitalisation when including REPower.

Milestones and targets

First payment request

The 37 programs are associated with 77 measures, divided into 38 milestones (qualitative) and 39 targets (quantitative), see Annex 1 for a full schedule.

At the first payment request, 23 milestones and 2 targets had been fulfilled, which was deemed to be satisfactory. Four measures under component 1 reached their milestone or target, viz. ensuring stocks of critical drugs (1 milestone), digital solutions in the health sector (1 milestone and 1 target) and emergency management and monitoring of critical medical products (1 target). The digital solution measures were related to telemedicine evaluation and patient rollout for telemedicine consultation.

Under component 2, two milestones relative to carbon-rich soils[3] and climate technologies in agriculture were complied with.

Under component 3, the first milestone concerned a political agreement to allocate own funds, DKK 645 million to be precise, for the replacement of oil burners and gas furnaces by district heating or heat pumps. Thereafter, two milestones for the scale-up of a subsidy scheme for energy efficiency in industry and energy renovation in public buildings were fulfilled. So was a fourth milestone on a feasibility study of CCS potential in the North Sea.

Component 4 (green tax reform) involved first of all the adoption of the overall green tax reform comprising inter alia an investment window offering a two-year tax rebate allowing 116 % of a green

[2] See European Commission's website, Denmark's Recovery and Resilience Plan, update from 9th of November 2023. https://commission.europa.eu/business-economy-euro/economic-recovery/recovery-and-resilience-facility/country-pages/denmarks-recovery-and-resilience-plan_en (downloaded on the 1st of June, 2024).

[3] When carbon-rich soils, typically soggy lowlands storing old biomaterial, are cultivated, they emit more CO2 than other fields. Therefore, a significant gain in CO2 emission reductions will result if such lands are taken out of production.

investment to be depreciated. Furthermore, an accelerated depreciation scheme should be approved, particularly benefitting small investments. Finally, the imposing of emission taxes on industry should be agreed on politically. The logic was to compensate for the emission taxes by the investment window and the depreciation schemes. Altogether five milestones were satisfied.

Component 5 on sustainable road transport: The reform on the registration tax of electric vehicles was carried through. Also, the milestone on the adoption of a test scheme for road pricing was complied with. It is a modest test of two different models involving 2,500 test drivers in the period April 2023 - September 2024. Two other milestones under this component were reached, analyses of a test scheme for double trailers on trucks; and of weight and dimensions of trucks for heavy haulage. Finally, Parliament entered into a political agreement on the green transition of ferries through a subsidy scheme. No milestones or targets relative to component 6, digitalisation, were achieved.

Component 7 comprised the adoption of active mission roadmaps for (1) CCS schemes, (2) green fuels for transport and industry, (3) climate and environment friendly agriculture and food production and (4) circular economy. The fifth milestone under this component was on incentives to boost R&D in companies, requiring a bill to raise the rate for tax deductions for R&D by 25 percentage points to 130 % in 2022. The proof was that 500 firms had been using the deduction for R&D work, to be documented in the third quarter of 2023.

Most of the milestones and targets thus concern legislative measures, analyses, plans and roadmaps or setting up systems carried out in the past.

Second payment request

At the second payment request 18 measures had been fulfilled. The first concerned a milestone under component 1 relative to digital solutions (implementation of a patient questionnaire). Under component 2 a target pertaining to industrial sites rehabilitation was reached, viz. the approval of four project applications. Component 3: Following the milestone of a legal framework for energy efficiency subsidies in industry reached at the first payment, the next milestone aimed at the successful completion of five application rounds. A large number of grant commitments were given. They should lead to an annual energy saving of 500 GWh.

Component 5: The premium for scrapping old cars had a target of 36,000 scrapped cars of which 19,000 were due to the increased premium from 2021. The target on information campaigns about car pooling and sharing that should be exposed 30 million times was also fulfilled satisfactorily.

Component 6 on digitalisation: Three (3) out of the 8 milestones/targets were reached at the second payment request. The first, identified as a reform, was the adoption of a digital strategy. The *National Strategy for Digitalisation – together in the digital development* published in May 2022. It was a result of the digital partnership established between government and the private sector,[4] which resulted in 46 different recommendations. The costs of implementation were included in the Finance Act 2022. Another milestone was the government adopting a cybersecurity strategy, whose cost implications also were part of the 2022 Finance Act. Third, the broadband pool target of 3,500 households covered with fast-speed internet was satisfied. The particular grant scheme was set up in 2020 and 2021 and funded in the financial

[4] Denmark set up 14 partnerships with the main branches of business in green (13) and digital transformation (1) and one on defense, starting in 2019, see page 1 of the report from October 2021 on Denmark's Recovery and Resilience Plan by the same author for Transform!Europe.

year 2021, but not until the time of submission of the second payment request, had the quantitative target been delivered.

The main investments of component 7 concern four mission-driven partnerships (called Innomissions) within greentech. Innomission I, 'Carbon capture and storage or use of CO2' (CCUS), had a target of setting up at least one private-public partnership (PPP). After an open call, a partnership was concluded between the Danish Innovation Fund and INNO-CCUS and signed in June 2022. At the time 53 members had signed on to the partnership. A second target was the actual funding of a research partnership by the Innovation Fund. The funds had been obtained and the Danish Technical University selected as administrator of five work streams or strategic areas: (1) chemical CO2 capture, (2) biological CO2 capture and storage, (3) geological storage, (4) CO2 utilisation, and (5) society and systems analysis.

Innomission II is termed 'Green fuels for transport and industry'. Under the second request the targets were the selection of at least one PPP and the actual funding by Innovation Fund Denmark. The agreement with the MissionGreenFuels partnership was signed on 3 August 2022. It has three workstreams, (1) technology, (2) infrastructure/P2X plants/sector coupling, (3) business and market development and acceptance. It had signed on 52 partners at the time.

Innomission III, 'Research in green solutions in climate and environment-friendly agriculture and food production' also included the signing of a PPP (AgriFoodTure) with the Innovation Fund plus the actual funding of the partnership as two separate targets. The administrator selected is SEGES Innovation P/S. It has five strategic areas: (1) land use and management, (2) animal-based food production, (3) plant-based food production, (4) biotechnology-based food production and alternative protein sources, and (5) value chain aspects. The partnership had 41 members by April 2022.

Finally, Innomission IV measures pertain to 'Research in green solutions: Circular economy use and reduction of plastic waste through the use of circular economy'. Both targets, the setting-up of a partnership and the actual attribution of funds from the Innovation Fund were measures of the second payment request. The PPP is called 'TRACE - Circular Economy with a focus on plastics and textiles' with 83 members by August 2022. Thus, altogether 8 targets were reached for the four investment lines.

The annex to the letter from the Ministry of Finance to the Commission on the modification of operational arrangements, dated February 19, 2024, defined 14 measures for REPower to be fulfilled in the future besides two reform milestones for the audit and control framework of the Recovery and Resilience Plan. These last two milestones were directed at the Ministry of Finance, the first one required it to submit a complete and reliable data set collected and stored in accordance with the RRF Regulation. The data are stored in 39 excel files and not available to the public. They also include financial benchmarks such as the total amounts approved and disbursements achieved. The second milestone was for the control system framework set up, not as a separate accounting system for RRP funds, but so that auditors would be able to retrieve the necessary financial information. Both of these were satisfactorily fulfilled – in fact the document as to their compliance had been submitted prior to the annex letter.

Disbursements under the RRP

The Ministry of Finance does not publish a list of the overall disbursements. However, it is an obligation to publish a list of allocations to the 100 largest beneficiaries twice a year. This does not mean that there have not been more disbursements of the paid-out EU funds, only that they are not reported on publicly. This is the case with the funds going to institutional intermediaries such as the Innovation Fund, which has disbursed a total of DKK 204 million from the RPP as of now.

As per reporting of the 2nd of April 2024, the 100 largest beneficiaries have shared nearly DKK 2,531 million between them. The following table provides a synthesis of disbursements as per approved amounts – please note again that this is not the full picture of disbursements.

Table 1: Disbursements relative to allocations by policy

No	Policy no/component	Disbursed (EUR million)	Allocation (EUR million)	Disbursed (%)
1	Healthcare	20.3	32.8	61.8
2	Agric.& Env.	31.5	177.2	17.8
3	Energy efficiency	19.0	273.8	8.0
4	Tax reform	43.0	524.2	7.5
5	Road transport	11.2	218.1	5.1
6	Digitalisation	6.0	89.3	6.7
7	Green R & D	207.8	241.6	86.0
	Total	338.8	1557.0	21.8

Details on programs are given in Table 2.

Table 2: Disbursements to the 100 largest beneficiaries by policy and program[5]

Policy no.	Program	DKK million	Euro million
1	Vaccines and drugs	144.00	19.28
	Digital solutions health care	8.00	1.07
	Healthcare total	**152.00**	**20.35**
2	Carbon rich soils	137.11	18.35
	Organic farming	37.24	4.99
	Rehabilitation of industrial sites	53.33	7.14
	Organic transition kitchens	7.99	1.07
	Agriculture and env. Total	**235.67**	**31.55**
3	Energy efficiency in industry	0.36	0.05
	Carbon capture & storage potential research	141.46	18.94
	Energy efficiency total	**141.82**	**18.98**
4	Investment window	321.24	43.00
	Expert group	0.05	0.01

[5] The Ministry of Finance (letter of August 27, 2024) has a slightly different calculation of component 2 and 7, placing climate technology in agriculture under component 2, which does not correspond to the way the measures are defined.

	Tax reform total	**321.30**	**43.01**
5	Bicycle infrastructure	73.50	9.84
	Road pricing	7.93	1.06
	Scrapping old cars	1.96	0.26
	Road transport total	**83.38**	**11.16**
6	Digital strategies	26.81	3.59
	Broadband	17.78	2.38
	Digitalisation total	**44.58**	**5.97**
7	Climate tech. agric/env.friendly agr.	78.62	10.53
	Research in green solutions	159.50	21.35
	Incentives to boost R&D	1.313.88	175.89
	Green R&D total	**1.552.00**	**207.76**
1-7	**GRAND TOTAL**	**2.530.75**	**338.79**

Exchange rate used: 1 EUR = 7.47 DKK

The interesting part is which firms partake in the spoils. Novo Nordisk, Lego System, Vestas Wind, Novozymes, Leo Pharma, Siemens Energy, Oticon, Bavarian Nordic, H. Lundbeck, Unity Technologies and Genmab each gets, respectively, DKK 52.25 million under the 'Incentives to boost R&D in companies' investment line. Novo Nordisk and Lego also get tax rebates under the 'investment window'. The two largest recipients, however, are Naturstyrelsen (The Nature Authority), accounting for DKK 132 million for carbon-rich soils, and Aarhus University which has received DKK 116.1 million, of which 92 million for a clinical study of the effects of covid-19 vaccines. Both are public institutions. The third largest recipient is Novo Nordisk as mentioned. After this comes Lego System which gets DKK 19 million under the investment window in addition to the R&D money.

The fifth most important recipient is Stiesdal SkyClean, which has developed a technology to remove carbon from the atmosphere through pyrolysis of agricultural waste, converting it to biochar and 'green' fuels. The approved amount is DKK 63.4 million under the heading of 'climate technologies in agriculture' (policy 2). No. 6 - 9 are Vestas, Novozymes, Leo Pharma and Siemens. The Danish Technical University (no. 10) is supported for a total of DKK 57.8 million, most importantly 'research in green solutions' amounting to DKK 43.5 million. It also gets money for CCS-storage potential. INEOS E & P (no. 17) has benefitted from DKK 49.9 million for CCS storage potential in the Greensand Project (policy 3). The Southern Region (no. 27) gets nearly DKK 36 million for the rehabilitation of industrial sites and contaminated land.

TDC (no. 30), the main digital infrastructure supplier in Denmark, got DKK 17.8 million for a broadband pool plus DKK 12 million through the investment window.

Strangely, the company Ascendis is mentioned as recipient no less than 5 times, through different divisions, Ascendis Pharma (no. 20), Ascendis P.E. Division (no. 24), Ascendis P.G. Disorders (no. 50), Ascendis P.B. Diseases (no. 51), Ascendis P.O. Division (no. 53). Altogether it has received DKK 138.8 million under the R&D incentive scheme, in addition to about half a million DKK under the investment window. Its products are developed from TransCon technologies combining "known biology with the benefits of prodrug and sustained-release technologies to potentially optimize therapeutic effect" (from its website). In contrast to the wealthy pharmaceuticals on the list, Ascendis is still struggling to generate a surplus.

The funds are thus used in part to support advanced technologies with a long time frame. A number of municipalities get funding for bicycle paths (up to DKK 12 million each).

Interestingly, some 22 % or DKK 553 million are allocated to public institutions such as universities, regions, municipalities, research institutes and government authorities. This percentage is lower than at the former publication of the 100 largest beneficiaries.

Some information has been obtained for the specific amounts allocated to the four innomissions. Already in 2021 Parliament set aside DKK 700 million for the four partnerships. DKK 295 million were added in 2022, all to be distributed by the Innovation Fund, and in 2023 DKK 300 million additional funds were forthcoming. In 2022 a total of 54 projects across all partnerships were launched for a total of DKK 316.8 million. This may well include DKK 201 million which AgriFoodTure got in April 2022 and the DKK 126.5 million that TRACE received in August.

A year later, in June 2023, the INNO-CCUS and MissionGreenFuels partnerships received a total of DKK 106.2 million for projects from the Innovation Fund. DKK 40 million were allocated to the four partnerships to develop their partnership capacities in December 2023.

The status today is that INNO-CCUS' website shows 24 projects with total budgets of DKK 195.3 million of which DKK 138.5 million from the Innovation Fund. The difference of 56.8 DKK million, around 30 %, comes from the partners, now 90 distributed over 21 projects.

Innomission II, MissionGreenFuels, shows a total budget of DKK 280 million. It is not known how much comes from the Innovation Fund/RRP, how much from the partners. To be frank, it is not easy to combine the various pieces of information that are neither provided systematically, nor wholly.

The total allocation for component 7 is more than DKK 1.8 billion (= EUR 241.6 million). Innomission funding under the RRP falls on the investment/program lines 'Climate technology in agriculture and environment-friendly agriculture' and 'Research in green solutions' with a combined total of EUR 31.9 million disbursed (DKK 238.1 million). As the incentive scheme for R&D taking up DKK 1.3 billion (EUR 175.9 million) also is part of component 7, up to 86 % of the amount allocated to this component has already been spent. It is difficult to see from which investment lines more RRP funds for the innomissions will come. And this is just stemming from the information on the 100 largest beneficiaries. It is impossible from available information to find out what funds going to the innomissions from the Innovation Fund stem from the RRP and how much the government contributes.

Additional funding under REPower EU

REPower EU is the EU response to the energy crisis following Russia's attack on Ukraine in February 2022. The aim is to help make EU countries independent of Russian fossil fuels even before 2030. With that in mind, an addendum to the Danish RRP was approved in 2024 with an additional allocation in the order of EUR 197 million. The addendum funds will be spent on the following programs under an eighth component added to the seven components already in place:

Table 3: Programs under the Danish REPower EU

Policy 8	**DKK million**	**Euro million**

8.1 Renewable energy		
National energy crisis staff (NEKST)	20.0	2.68
Preparation of 4 GW offshore wind	97.7	13.11
Screening of offshore wind capacity	52.0	6.98
Test wind mills	207.8	27.89
8.2. Green adult education		
Pool for green education	276.7	37.14
8.3 Replacing oil and gas boilers		
District heating pool	188.0	25.23
Decoupling from gas network	147.0	19.73
8.4 CCS		
Capture and storage of CO2 (NECCS)	477.8	64.13
RePower EU total	**1467.0**	**196.91**

The need to disengage from Russian oil and gas strengthened the call for replacing oil and gas burners and expanding the district heating network, which was already fairly extensive, and this gave priority to one of the 8.3 investment lines. The second line under 8.3 is decoupling from the gas distribution network. CCS also gets a considerable amount. Whether this amount is additional or part of the NECCS funding already foreseen (see next section below) is not clear. Green education (8.2) aims at improved vocational training.

14 measures, numbered 78 to 91, were added in February 2024 relative to component 8. A new component 9 comprising measures 92 - 93 for the audit and control reform needed to carry out the Danish RRP was defined and reported on as part of the second disbursement request, as mentioned above under the second payment request.

The new measures under component 8 seem to be more closely connected to the funds set aside than was the case with DRRP. The Finance Act 2024 comprises 'transfer revenue from EU' for decoupling from the gas network for DKK 252.3 million 2024 – 2026, exceeding the REPower amount for this particular purpose (DKK 147 million). It was supported by RRP in the years 2022 – 2023 (DKK 39 million). District heating is shown to have received DKK 379.5 million in the years 2021 - 2023 in transfers from the EU, without specification of the EU source. The Act does not include EU funding for district heating for 2024 onwards despite the REPower funding made available in 2024. The targets to be fulfilled with respect to district heating are merged with those for decoupling from the oil and gas network under components 3 and 8.

Complementary Funding

The Innovation Fund dates back to 2014 where various government research funds and grants were merged into one foundation. By now it has a project portfolio of DK 7.4 billion, including the four mission-driven partnerships.

Green and black investments: INEOS in the North Sea. A political agreement was reached in 2020 on storage of CO2 in Denmark. The Danish state will get a 20 % share of all commercial projects.
INEOS' Project Greensand was started as a pilot, transporting CO2 from INEOS' oxide factory in Belgium by ship to be stored at a depth of 1,800 meters in a depleted oil field in the Danish part of the North Sea. Its aim is to be able to store 1.5 million tons CO2 by 2025/2026 and 8 million tons CO2 per year by 2030. The pilot phase launched in March 2023 covered no more than a modest 15,000 tons. INEOS E&P belonging to the INEOS Group is a 'black' energy company, active in the US, UK and Denmark. It has acquired and operates several Danish oil and gas fields.
Besides CCS, it has an oil license to the Hejre Field, which it now wants to exploit. The Energy Authority has approved its revised plan to extract until 2047. This may be in conflict with the North Sea Agreement of December 2020 to put an end to Danish oil and gas production by 2050 and to abstain from new tenders. The Energy Authority argues that this is in compliance with an existing permit, granted before the North Sea Agreement. Greenpeace has launched a complaint, not only claiming that this is contrary to the Paris Agreement on climate change and the Danish CO2 goals, but also that the environmental impact assessment is deficient.

In 2020 the Danish Green Future Fund was launched[6] to the tune of DKK 25 billion. Part of this was the Fund for Green Investments, which got DKK 6 billion. In 2023 this fund merged with two of the other funds of the Future Fund (Growth Fund and the Export Credit Agency) to become Denmark's Export and Investment Fund (EIFO). It has obtained DKK 318 million in funding for guarantees from the EIF (InvestEU) to accelerate digitalization in SMEs. EIFO exclusively targets private investment capital support.

EIFO in May 2024 awarded DKK 634 million – out of an allocation of DKK 1 billion possible - to Siemens Gamesa, Nieburg Gears (gears for i.a. windmills), Advanced Surface Plating (i-electrolysis), Njord Assembly Lines (information not available on the web) plus H2Giga (green hydrogen) with the express purpose to create 800 jobs/prevent green businesses from leaving Denmark. The investments will total DKK 4.2 billion. They are all involved in aspects of PtX technologies and can be seen as part of the same nexus as the RRP projects.

The Green Fund, a framework agreement for a total of DKK 16 billion until 2030, was part of the green tax reform. Its funds stem from the 'fiscal scope', calculated as per the expected surplus budget resources. These means are committed annually to specific purposes. The first allocation, of DKK 5 billion, was made in 2024. It has a broad range of activities, not just in energy but also environment.

Also in 2020, a subsidy pool for CCUS initiatives was set up, for a total of DKK 16 billion. In May 2023 a first contract was awarded to Ørsted Bioenergy & Thermal Power for capture and storage of a total of 430,000 tons CO2 annually from 2026, stemming from two biomass-fired cogeneration (heat and electricity) plants. The cost to the government could be a whopping DKK 8 billion over time. In 2020 another pool, for negative emissions (NECCS), was created to the tune of DKK 2.5 billion. Now these funds are merged and expanded with parts of the Green Fund so that the total is nearly DKK 27 billion for CCS and negative emissions. The ambition is to reach 2.3 million tons CO2 reduction by 2029 by CCUS alone. As seen, nearly half a billion Danish kroner was added by REPower EU to CCS.

EUDP (Energy Development and Demonstration Program) is handled by the Energy Authority. It dates back to 2007. In 2023 it committed DKK 543 million for innovative energy projects, very much in the same vein as the INNO-CCUS partnership. It also spends RRP funds (INEOS Greensand Project).

The latest addition is the Danish Area Fund attached to the three-party agricultural agreement (see below under Impact) that will be endowed with DKK 40 billion. It will purchase land, plant forests and in general help fund the green transition in agriculture and on environmental improvement of degraded lands and water resources, among others by planting 250,000 ha of new forest. Novo Nordisk has promised to contribute DKK 10 billion to the implementation of the agreement.

Impact

Denmark has adopted a policy goal of 70 % CO2 reduction by 2030 as per emissions in 1990. An intermediate goal is 50 - 54 % by 2025. It has been announced that the 100 % target by 2050 will be moved forward to 2045 so that there should be negative emissions by 2050 (110 % reduction). These goals are set to be reached primarily through the heavy investments in renewable energy. The last coal-fired power plant will be closed in 2028. By that time all electricity produced will be from sustainable sources, and biogas that counts as CO2-neutral will have supplanted natural gas. The intermediate target for 2025 will in

[6] Comprising Vækstfonden ('Growth Fund'), EKF (the Export Credit Agency), the Fund for Green Investments, and the Fund for Green Investments in Development Countries.

all likelihood be met. A major contributing factor is the downward revision of the ongoing emissions from agricultural lowlands or carbon-rich soils. In practice, this was reached by creative accounting as more emissions from lowlands were made earlier on than measured at the time. These emissions were real and do not disappear from the atmosphere, only from the statistics. Other positive developments are noted, though. Household energy consumption for heating is decreasing rapidly by the substitution of heat pumps and district heating for gas-fired boilers in private homes. Also, transport is improving, albeit slowly, by the higher-than-expected diffusion of electric vehicles. And fourthly, with respect to the 2030 target, it is supposed that CCS technologies will contribute 2.5 million tons CO2 to the reduction by that time. These measures alone should reduce emissions by 12.7 million tons by 2030 (down from 41.4 million in 2022), it is estimated.[7]

Whether CCS will reduce CO2 emissions by 2.3 - 2.5 million tons by 2030 is an open question. Project Greensand can perhaps contribute 1.5 million tons. But it uses imported CO2 that will not count in Denmark's CO2 balance. The Ørsted CCUS project (430,000 tons) and 3 small biogenic initiatives (NECCS) adding up to 160,000 tons, will not quite make it. However, the addition of new subsidy funds and the fact that private research and pilot schemes are underway, makes it more realistic. There is no doubt that RRP has contributed significantly to this outlook.

An unresolved problem in Denmark – as in many other countries - is agriculture, which stands for more than a third of emissions, expected to increase to 46 % in 2030. A CO2 tax on agriculture has been negotiated after an economic expert group proposed three taxation scenarios in the second report from the tax expert group financed under the Danish RRP. The agricultural lobby (spearheaded by the Danish Agriculture & Food Council, Landbrug & Fødevarer) is very strong, and the result of the 'three-party' agreement reached (but not approved by Parliament yet) will result in the lowest tax rate proposed, DKK 120 per ton $CO2_e$ emitted (after some roundabout measures raising the rate nominally and lowering it again through tax deductions). The other proposals were DKK 750 and DKK 375 per ton CO2.

The DKK 120/ton CO2 to be imposed on agricultural, in fact animal, emissions mirrors the green tax reform for industry adopted in 2022, one of the milestones reached at the first payment. For industry a CO2-tax or levy of DKK 750 will be imposed per ton CO2 emitted for firms that are not part of the EU Emissions Trading System (ETS) and DKK 375 for emissions on firms that are part of ETS (by 2030). Mineralogical processes will be assessed by DKK 125 per ton CO2 emitted in 2030.[8] This is the very same green tax reform for which EUR 163 million was set aside in the Danish RRP under the investment window (two-year tax rebate).[9]

Stakeholder Assessments and Future Developments

A conference was held on the DRRP on the 20th of March, 2023 in the Headquarters of DI, Danish Industry, with high-level EU officials. The Finance Minister, Nicolai Wammen, the Commissioner for Competition, Margrethe Vestager, and the Head of DI were speakers.[10] Altogether the EU representatives, the Danish officials and private sector praised what was being done. There was a call for a clearer framework and understanding of when in the process a company should access funding and altogether for an acceleration of procedures.

[7] The Danish newspaper *Information*, 1st of May 2024.
[8] Basically a provision targeted at the large cement producer, Aalborg Portland, which has its own CCS pilot project.
[9] See https://commission.europa.eu/business-economy-euro/economic-recovery/recovery-and-resilience-facility/country-pages/denmarks-recovery-and-resilience-plan_en.
[10] See recording of the conference, https://live.industrienshus.dk/danish-recovery-and-resilience-plan-4.

One of the participants, Head of Climate & Sustainabilty at cBRain, a company delivering digital solutions to the public sector, in a subsequent telephone interview expressed that the funds - because of bypassing normal government procedures - had facilitated the setting-up of a system for vetting applications to take lowlands out of production so that a significant increase in the number of applications had resulted. He also mentioned that perhaps earmarking for digital initiatives was more beneficial in Eastern Europe than in a highly digitized country such as Denmark, which on the other hand was offered export opportunities.

A conference organized by INNO-CCUS in Copenhagen on 22nd of May, 2024 launched the Danish CCUS Roadmap 2024 with a direction set on 2050, following up on the roadmap of three years earlier (a first-disbursement milestone). The Roadmap presentation catalogued all the different types of CCS technologies and uses, biogenic, direct air capture, nature-based solutions, geological reservoirs and transport of CO2 as well as utilisation. It also reviewed the maturity of the different technologies in the Danish context and their societal impact. There was no economic analysis, neither cost-benefit, nor an overall macro assessment. But the technological potential for CO2 reduction (technology reduction level – TRL) was given and held up against CO2 prices. At this time the INNO-CCUS has more than 80 partners and 30 projects. The conference also included representatives from DI and politics as speakers. They were optimistic about the potential which however was deemed to be heavily subsidy-dependent for it to mature. By now, this is accepted policy. It was mentioned that US experts had been very impressed by the state of readiness for developments in CCUS, suggesting that Denmark could become a world leader. Altogether Danish business sees RRP as an important boost to energy technology and digital solution exports to particularly EU countries that are lagging in this direction. The arguments put forward at the May conference in favour of this type of cooperation directly referred to the added need for support imposed by US competition through the Inflation Reduction Act.

Along with this, a new and unexpected development is taking place. Some ambitious green transition projects that are fully in line with the intentions of the support under the RRP are stalling. Ørsted was engaged in a PtX/green fuel project, FlagshipONE, in Sweden that it has now abandoned, at a loss of DKK 1.5 – 1.8 billion. Furthermore, two major 'energy islands', one in the North Sea and one in the Baltic Sea are either given up or postponed because of economic concerns that they will be much more expensive than first calculated. Therefore, a pipeline to transport hydrogen from northern Denmark to Germany is in doubt as government wants firm demand commitments from businesses before engaging in the pipeline investment. And the hydrogen depends on the North Sea energy island…. Very big funds are at stake and opposition to grandiose schemes may be gaining ground.

Neo-liberal Reforms vs. New Industrial Policy vs. SGP

One important point in the overall assessment is the strengthened cooperation between government, business, university and research institutions. Business is investing own funds in new technologies because it has seen the writing on the wall, but also argues for the need for continued support. The first steps to the New Industrial Policy have certainly been taken in Denmark although it is argued in official documents related to the RRP that there is no undue state subsidy.

Neoliberalism is generally associated with the prohibition of state aid to private businesses, as powerfully stated in Article 107(1) of the Treaty of the Functioning of the EU (TFEU), "Save as otherwise provided in the Treaties, any aid granted by a Member State or through State resources in any form whatsoever which distorts or threatens to distort competition by favouring certain undertakings or the production of certain goods shall, in so far as it affects trade between Member States, be incompatible with the internal market". Lip service is paid to this through the adage of creating or maintaining 'a level playing field', perhaps in

order to compensate for ‘market failure’. This ground rule has been and is undermined in many ways although the EU officially maintains its allegiance to the creed.

The EU itself has made concessions. The General Block Exemption Regulations (GBER) that exempt from prior notification of the EU of state aid were expanded in 2014 so as to include SME support, research, training, regional aid and much more, still keeping up the stiff upper lip of ‘market failure’ compensation. The Energy and Environmental State Aid Guidelines (EEAG), also from 2014, went a little further with respect to energy and environment. It was replaced in 2022 by CEEAG, adding climate to the alphabet soup. Once general exemptions are granted, they cover large and small businesses alike – discrimination may not be exercised when exempting, thereby facilitating the rather absurd result seen for Denmark; that large corporations are getting full benefits from RRP state aid. Admittedly, in official documents there is mention of the obligation of the RRP to avoid overcompensation, and clauses are added to that effect in contracts, but that seems rather vague compared to the overall result. With the direct aid to investments in the windmill industry, it seems that the border has been crossed to state aid that according to any reasonable interpretation of Article 107 (1) should not be possible. It points to the need for revision of the basic clause as well as of the policies.

There is no question of challenging the SGP. The Danish government accounts overflow with past and present surpluses. Although considerable future amounts are now reserved for military spending (up to DKK 190 billion) in the coming years, there is certainly no cash shortage, just like the government public debt is no more than 30 % of GDP. The public budget surplus was DKK 103 billion in 2021, over DKK 90 billion in 2022 and DKK 87 billion in 2023, exceeding 3% of GDP.

Decent Work and Job Opportunities

As such, the RRP does not target decent work although the ‘green education’ investment will mean better job skills/opportunities. Although the country at the moment is in dire need of a more skilled workforce in the high-tech area, there is a pronounced political concern for more jobs. The job argument is used - by some - to defend highly industrialized agriculture continuing unabated and it is used to subsidize investments by companies that are well consolidated such as Siemens Gamesa.

A study made for ETUI by a Danish researcher in 2022[11] concluded that there was no significant impact on the social dimension and the labour market by RRP. It mentions that there could be a positive impact from the digital investments and health measures (telemedicine), albeit minuscule. This may be modified slightly by the training investment under REPower.

Projects in organic farming benefitting organisations that are wholly devoted to the green transition and ensuring a sustainable environment (ecological agriculture) also get funding. It is generally thought that less capital-intensive agriculture will create jobs. To be noted that Landbrug & Fødevarer, which basically protects conventional industrialized agriculture, also partakes in funds for organic farming.

Conclusion and criticism

[11] Bjørn Holtze. National Recovery and Resilience Plan: Denmark. Italian Labour Law e-Journal Special Issue 1. Vol. 15 (2022) NextGeneration EU in Action: Impact on Social and Labour.

Denmark will without doubt be able to use the resources obtained. It is not clear, though, how performance is matched with financial resources. Since so many initiatives are ongoing in the fields covered by the RRP, it is easy to attribute a 'performance' to a RRP measure, no matter if the measure would have been undertaken anyway.

Some targets and milestones to be fulfilled have been defined by measures that were already implemented or just about to be implemented. As the investment line disbursements are not publicly available, it is difficult not to conclude that the funding is only loosely connected to the investments. As the budget lines are not easy to distinguish, some surreptitious reshuffling may be going on.

More importantly, the reporting of the subsidies given to the 100 largest beneficiaries are not catalogued in complete conformity with the milestones reporting (see Annex 1), which contains the four innomissions as four distinct investment lines in comparison with the reporting on the payments (taken directly from the list of beneficiaries) where the categories are slightly different.

It is highly surprising that so many – and so powerful – pharmaceutical companies are supported. The explanation from the Ministry of Finance is that the 'Incentives to boost to R&D' program can be accessed by all businesses that are not involved in fossil fuels or raw materials. The overall policy or component is called 'Investing in green research & development', though, so one would think that R&D should be targeted at the green transition. The Danish interpretation is endorsed by the EU.[12] In this way the contribution to the green transition may be exaggerated, depending on how the accounting is done, which is not known.

Danish agricultural interests and their strongest organisations claim that they are fully committed to the green transition, but that implementation ought to be voluntary and every concession and measure fully compensated. As it is, the plans for carbon-rich soils to be taken out of production, are not only behind schedule but also behind what is necessary, both for the climate and the environment.

It can therefore be concluded that the chances of 'success' in CO2 reductions, as measured, may not fully take into account additional sources of emission created all along.

It is undeniable that the RRP has a 'corporate' character although public institutions are also supported in their work.

[12] See https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CONSIL:ST_14473_2023_ADD_1EU, p. 57-58.

Investments, milestones and targets			ANNEX 1
	Measures	**Milestones**	**Targets**
Investments (I)/reforms (R)			
Component 1: Health care (measures 1-6)			
I 1: Clinical study on effect of COVID-19 vaccines	1	1	
I 2: Measures to ensure stocks of critical drugs	1	1	
I 3: Digital solutions in the healthcare sector	3	2	1
I 4: Emergency management & monitoring of critical medical products	1		1
Subtotal	**6**	**4**	**2**
Component 2: Green transition (measures 7-18)			
R 1: Carbon rich soils	3	1	2
I 1: Organic Farming	1		1
I 2: Organic transition of public kitchens	1		1
I 3: Organic Innovation Centre	1		1
I 4: Plant based organic projects	1		1
I 5: Climate technologies in agriculture	2	1	1
I 6: Rehabilitation of industrial sites and contaminated land	3	1	2
Subtotal	**12**	**3**	**9**
Component 3: Energy efficiency, green heating and CCS (measures 19-30)			
I 1: Replacing Oil Burners and Gas Furnaces	3	2	1
I 2: Energy efficiency in industry	3	2	1
I 3: Energy renovations in public buildings	2	1	1
I 4: Energy Efficiency in Households	2	1	1
I 5: Carbon Capture Storage (CCS) Potential	2	2	
Subtotal	**12**	**8**	**4**
Component 4: Green tax reform (measures 31-40)			
I 1: Investment window	3	2	1
I 2: Accelerated depreciation	3	2	1
R 1: Expert group to prepare proposals for a CO2e-tax	1	1	
R 2. Emission taxes on industries	3	3	
Subtotal	**10**	**8**	**2**
Component 5: Sustainable road transport (measures 41-53)			
R 1: Registration tax of vehicles and low electricity tax on electric vehicles	2	1	1
I 1: Temporary increase in the scrapping premium for old diesel cars	1		1
I 3: Development test of road-pricing	2	2	
I 3: Car sharing and carpooling (awareness)	1		1
I 4: Analysis of test scheme with double trailers	1	1	
I 5: Analysis of the regulation on weight and dimensions to optimise heavy haulage	1	1	
I 6: Scheme to infrastructure for electric bicycle	1		1
I 7: Investments in bike paths and bicycle subsidy scheme for municipalities	2		2
I 8: 8: Subsidy scheme to green ferries	2	1	1
Subtotal	**13**	**6**	**7**
Component 6: Digitalisation (measures 54-63)			
R 1: Digital strategy	8	4	4
I 1: SME's digital transition and trade	1		1
I 2: Broadband pool	1		1
Subtotal	**10**	**4**	**6**
Component 7: Investing in green research & development (measures 64-77)			
I 1: Carbon capture and storage or use of CO2	3	1	2
I 2: Green fuels for transport and industry	3	1	2
I 3: Climate- and environment friendly agriculture and food production	3	1	2
I 4: Circular economy focusing on reuse and reduction of plastic and textile waste	3	1	2
I 5: Incentives to boost R&D in companies	2	1	1
Subtotal	**14**	**5**	**9**
TOTAL	***77***	***38***	***39***