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# The policy process behind Norway's BEVolution

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**Executive Summary**

Norway is an orderly country were policy needs and policy options normally are thoroughly evaluated before policies having economic or other substantial impacts are introduced. Yet, it turns out that this is not the case for the introduction of many of the major BEV policies. Policies costing Billions of NOK in lost tax income in 2021-2022 were introduced from as early as the 1990s, without any impact assessment or justification for the decisions made by the Government or the Parliament. This is evident from a scrutiny of all available documentation on how these decisions were made. Many of these in retrospect very costly policy decisions were however made when little was known about BEVs future potential and were intended to enable market experimentation and establish a niche market. They were kept in place and had a major market impact 1-2 decades later when the worlds largest per capita BEV market and BEV fleet was built up. The Government tax income loss became large, which was not intended when the policy was introduced A recommendation for a, better policy process is to evaluate incentives in regular public policy reviews, document changes and rationale, and tune policies to the actual market development.

*Keywords: Policy, Incentive, Strategy, Passenger car, Government.*

## 1 Introduction

Norway is the world leader in BEV adoption [1] with more than 600 000 BEVs on the road at the end of 2022, which constitute 20.5% of the total passenger car fleet with PHEVs constituting another 6.8% [2]. The BEV market share reached 79.3% in 2022 with PHEVs accounting for another 8.5% [2]. 12 years earlier there were only about 3000 BEVs in Norway [3]. The first incentives for BEVs were introduced as early as 1990 to enable market experimentation and evaluate BEVs technical and market potential in Norway's demanding climatic conditions, and support innovation [3,4]. Then followed a period of attempting to build a Norwegian niche BEV production and market 1999-2002, and again 2008-2010, by adding more incentives [3,4]. All these initiatives had failed by 2010 [3,4], but the market took off when OEMs used their vast resources to produce BEVs from 2011. A new BEV regime emerged [4] when BEVs became economically competitive with ICEVS [6] supported by a developing charging infrastructure ecosystem supporting long distance travels [7], although its organization was inefficient from a user perspective [8].

Figenbaum [9] has previously analyzed the knowledge available to politicians when introducing various incentives and policies, but no one has analyzed in detail how and why these incentives came about, which

is the theme of this paper with the research question: *How and why were the BEV policy and incentives established?* The process behind the introduction of each incentive and later revisions to these incentives is evaluated individually before assessing the overall process and recommending improved policy processes.

The current policy target is that BEVs shall constitute 100% of new vehicle sales from 2025. The incentives in place until the end of 2022 were: exemption from the registration tax (1990), an exemption (1996) and later a reduction of the annual tax, a zero rate Value Added tax on purchase (2001) and leasing (2015) . Further incentives are the free/reduced parking fees (1999/2018) and toll roads (1997/2018), reduced ferry rates (2009) and access to bus lanes in the Oslo area (2003) and nationally (2005), which was scaled back after 2015 by limiting rush hours access. Finally there has been a re-registration tax (on second hand sales) exemption/reduction (2018/2022) and reduced benefit tax on company cars (2000). Support schemes for normal chargers has generally been in place in Oslo since 2008 and nationally since 2009, with some specific chargers also installed before that. Support for the deploymene of fast chargers has been available since 2011.

## 2 Materials and methods

About 250 research, government, civil services, consultants, NGO and industry articles, reports and other documents were identified as dealing with some aspect of the Norwegian BEV development and were evaluated for their relevance towards the policy development process. These documents were complemented with press articles found using the Norwegian Retriever archive service. Many of the reviewed documents prior to 2000 are not publicly available and comes from the authors archive. Most of the early documents covering the period up to 2010 and the majority of the press articles are only available in Norwegian.

The policies are evaluatet based on the degree to which they have followed the structured processeses normally followed when Norwegian policy is developed, as depicted in figure 1. The normal Norwegian Governance process for new policies is to introduce them in the National Budget Documents, based on an internal or external expert group evaluation of its implications on the economy, the public, businesses and the national budget. Internal work groups are used for tax policies to avoid tax speculation, and such proposals are not known to the public until the annual budget is presented in the beginning of October each year. Such polices can in some cases have been discussed in earlier expert groups suggestions for improved policies. Following a debate in the Parliament the proposal is approved, rejected or amended. Policies that requires a law change, for instance those that affect businesses, consumers or other governance levels, are subject to a law change hearing process after the decision in the Parliament to ensure that no unexpected effects occurs when it enters into force. Law changes that only affects the national governance level can be taken directly by the Parliament. The Parliament can petition the Government to introduce a specific policy to which the Government has to provide an answer within reasonable time, normally the next National Budget Documents.

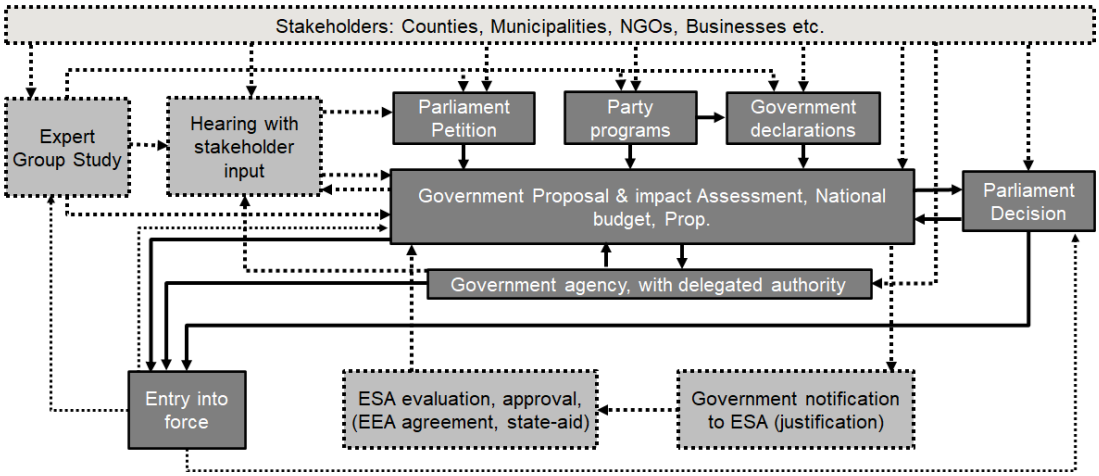


Figure 1 Generic BEV Policy development process flow.

# 3 Results

## 3.1 The 1990-1999 BEV policy processes

Exemption from the registration tax and the km tax (1990, 1996)

The registration tax generate Government income. It roughly doubled 1990 vehicle sales prices [6]. Industry actors [10], and an Environment NGO lobbied for an exemption [11]. The Finance Minister was positive [12]. A temporary exemption to enable market experiments came in the 1990 National Budget (Ministry of Finance 1989), which the Parliament endorsed [13] without an Impact Assessment. With 5 BEVs in the fleet [3], the tax loss was negligible. The exemption became permanent when a 1996 National Budget vehicle tax reform [15] was adopted by the Parliament adopted [16]. No impact assessment was made, contrasting the detailed assessment of the reform itself. BEVs were also exempted from the km-tax.

Exemption and reduction from the annual tax (1996)

The annual tax exemption was introduced in the 1996 National Budget vehicle taxation reform debate in the Parliament, and documented with one sentence in the minutes [16] without any impact assessment. The reform [15] had not proposed this incentive. With 50 BEVs in the fleet [3], the budget impact was negligible. BEV owners had to pay [17] a traffic accident tax (~40 €) that had been collected on vehicle insurance when it in 2004 moved to the annual tax. The 2015 vehicle taxation policy settlements [18] decision on half annual tax from 2018, was broken in 2016 when the Parliament decided on a full annual tax exemption from 2018 [19], when a vehicle insurance tax was to replace the annual tax [20]. In the National Budget for 2021, it was proposed [21] a low rate (70% of ICEVs), which the Parliament agreed to until the incentive was removed from April 2022 [22].

Free public road tolls (1997) and free public parking (1999)

An Environment NGO supported by the pop group A-ha refused to pay road tolls and parking fees for their BEV in Oslo in the early 1990s [11], stating that BEVs should be exempted. The EV Association and Oslo Energi (electricity company) also supported such incentives. Oslo, being pressured [3,9,11], decided in 1995 [23] to offer free toll roads, and in 1997 free parking [24], to reduce pollution and get a planned PIVCO/THINK BEV factory to Oslo [25]. National laws inhibited this and the Public Roads Administration [26] said road tolls could only be used to build roads. The Parliament changed the law and BEVs were exempted from road tolls from 1997 as an environment friendly means of transport comparable to buses already exempted [26]. No impact assessment was made. The Minister of Transport said toll road companies would not be impacted due to the low number of BEVs, but longer payment or higher rates could be required in the long run. Free public BEV parking [27] came after a Ministry of Transport [28] parking regulation revision process [11] and law changes [29,30]. The parking fee losses were negligible with 285 BEVs in the fleet [3]. In 2016 the Parliament decided that local authorities should decide BEV parking fees [31], following a 2015 vehicle tax policy settlement [18] . As part of the 2017 National budget, the Parliament decided on a maximum 50% rate of ICEVs for parking and road tolls to be decided by local authorities [19]. This change was not implemented for parking. The toll road rates can be up to 70% of ICEVs from 2023 [32].

Reduced company car tax (2000)

A reduced company car benefit tax was introduced from 2000 [33]. The Prime minister [34] presented it at the 1999 Ford/THINK/PIVCO factory opening to support industrialization, and acknowledging BEVs low private benefit due to the short range and long charge times. No expert group report or impact assessment existed. BEV company car sales were low (the zero rate VAT did not apply for leased company cars until 2015). A tax revision in 2005 set BEVs value to 75% of their list price before calculating the tax [35]. It was changed to 50% in 2009 [36], 60% in 2018 [37,38], 80% in 2022 [39,40] and 100% in 2023.

## 3.2 The 2000-2010 BEV policy processes

Zero rate VAT (Value Added Tax) (2001)

The THINK BEV was too expensive [3]. Ford now owning THINK was passive about tax incentives. Ford preferred public fleet targets [3] as in the US. The EVA and Bellona (NGOs) established a lobby project [11]

to influence a coming VAT reform in the 2001 National Budget, which was based on an expert group report [41]. These lobbyists told Parliament members that a VAT exemption was needed to support the BEV market and THINK. The politicians were positive according to EVA board meeting minutes [42], and they decided [43] on a zero rate VAT as part of the reform [44] to make BEVs economic to buy. This incentive was not part of the original reform [45]. A 2001 tax loss of 10 million NOK for 250 BEVs sold was calculated for 2001. No impact assessment or expert group study supported the decision. A gradual VAT re-introduction after 2017 was proposed in the 2015 Revised National Budget [46]. The Parliament decided to keep the incentive through 2017 after ESA approval [47], and then through 2020 [48], and further to 2022 [49]. In the 2022 Revised National Budget [50], the zero rate was proposed to be replaced by a support scheme covering the VAT up to a BEV price of 500 000 NOK, and curb it at 125 000 NOK. The Parliament decided on full exemption up to 500 000 NOK and full VAT on the price above that sum, and to keep this scheme in place until 2025 [51].

Access to bus lanes (2003/2005)

The NPRA wanted in 2001 [52] to ban minibuses from bus lanes as consumers used them to avoid rush hour queues, a window of opportunity [5] making room for BEVs, a much more environment friendly alternative. Lobbyists [53] hoped this incentive could turn around Fords decision to sell THINK [11] and persuaded the Minister of Transport [54,55] to initiate a test in the Oslo area from mid-2003 to see if buses were delayed by the slow BEVs [5] used then. The experiment lasted two years. Buses were not delayed. The BEV demand increased [56,57]. The incentive became permanent and nationwide in 2005 and minibuses were thrown out from 2009 [58] through administrative decisions. The test project replaced the impact assessment normally required. The motivation was to reduce city pollution and support the market [59,60]. It had no budget impacts and was not state aid [47]. A passenger was needed in rush hours from 2015 [61,62,63].

Average new vehicle $CO_2$-emission 120 g/km by 2012 (2007)

The first climate policy specific vehicle target of reducing average new vehicle $CO_2$-emission to 120 g/km came in a 2007 Government press conference [64]. The 2007 Climate Policy Bill [65] to the Parliament had had no specific vehicle target, only a sentence about phasing in ZEVs. The vehicle importers lobbied for the 120 g/km 2012 target to favor diesel ICEVs that in theory reduce $CO_2$ emissions 20-25% compared to gasoline ICEVs. The target was to be achieved by tuning the $CO_2$ element in the registration tax. No impact assessment was published. The Parliament majority formalized the target as part of the 2008 Climate policy settlement [66]. It was more ambitious than EUs voluntary target to reach 130 g/km by 2015, which became an EU-regulation in 2009 [67].

Increased vehicle allowance business trips (2008).

An higher business trip km allowance for BEVs was decided without impact assessment by the Government in 2008 [68] to support THINK's reopened factory.

Reduced ferry rates (2009)

The Minister of Transport gave [69] BEV owners reduced ferry rates, based on an idea from a voter [70] and an administrative decision, targeting BEV industry support BEVs were free of charge whereas the driver paid the regular fee. No expert group study or impact assessment was made. The rationale was stated to be to reduce vehicles energy consumption and environmental and climate impacts of transport [71] and spread BEVs to coastal areas. No stakeholders were involved. The NPRA had already the delegated power to make the change. With 2424 BEVs in the fleet at the end of 2008 [3], most of them in cities, the incentive would not strain ferry operators budgets. From 2018 ferry operators can charge BEVs 50% of the ICEV rate.

## 3.3 The 2011-2023 BEV policy processes

Average new vehicle $CO_2$-emission 85 g/km by 2020 (2012)

The 2012 Climate Policy Bill to the Parliament [72] proposed to reduce the average new vehicle $CO_2$-emission to 85 g/km by 2020, which required sales of BEVs, PHEVs or FCEVs [73], and/or tuning of the registration tax $CO_2$-element. The Klimakur 2020 expert study [74] had provided a knowledge base for $CO_2$ reduction measures towards 2020, but the target itself had not been proposed. The rationale was to reduce

GHG emission inspired by the EU's 95 g/km 2020 target that had been suggested in the 2009 EU regulation [67], and formalized in 2014 [75].

Keep incentives until 50.000 BEVs in fleet or through 2015 (2012)

The 2012 Parliament Climate policy settlement [76] kept incentives in place until 50000 BEVs in the fleet or through 2015, to reduce the uncertainty about the future although the Government in 2011 had no plans to change them [77]. This decision extended the time horizon into the next beyond annual budget processes and into the next Parliamentary period. The Parliament thus linked for the first time the level and timeframe of BEV incentives with long-term vehicle (85 g CO2/km by 2020) and climate policy targets, but without an impact assessment. The Parliament made the decision itself, supported by the Klimakur 2020 expert group report [74]. ESA was wrongly not notified [47].

Keep incentives in place until end of 2017 (2013)

The 2013 Government declaration [78] between the Government and support parties in the Parliament, specified BEV incentives to continue through 2017 (the Parliamentary period) regardless of the number sold. One of the smaller parties (Venstre) was a strong proponent for strong climate policies and in particular the BEV policy and got it into the declaration. The majority made Parliament approval easy. Impact assessment was partly in the 2012 Climate policy bill [76] and Klimakur 2020 [74]. ESA was wrongly not notified.

Zero rate VAT for BEV leasing and battery replacement (2015)

The Parliament asked ([79] in the 2014 National Budget process the Government to introduce zero rate VAT for BEV leasing and batteries [80]. An NGO/auto-sector report [81] had proposed to treat leasing equal to purchase and address concerns about battery replacement costs (Assum et al. 2014, Figenbaum et al. 2014). The Government proposed this incentive in the 2015 RNB [46], after having notified ESA [84] which verified compliance with state aid rules through 2017 [47], including the zero rate for BEV-purchase which the Government had not realized needed notification. The decision came without an impact assessment in the RNB 2015 debate [46,85], when the parliament adopted VAT law changes [86]. It entered into force July 2015. The tax loss was estimated to be 40 million NOK [46]. ESA found at the same time that the bus lane access was not state-aid. The registration tax exemption and free parking were in place before the 1994 EEA agreement, and acceptable. The other economic incentives were found state aid relevant, but proportional.

Vehicle taxation policy settlement (2015)

Several incentive change proposals came in the 2015 Revised National Budget [46] to stop the increasing tax loss due to BEV sales. The RNB did state that BEVs should fare better than ICEVs in the tax system to support 2020 and 2030 climate policy targets and the 85 g $CO_2$/km target for 2020 and that all incentives should last through 2017, and the registration tax exemption through 2020. But, the zero rate VAT was to be replaced by a support scheme after 2017, initially equal to the zero rate VAT as had been suggested by the Green tax committee [87]. This support would be reduced as technology improved. Re-introduction of the annual tax from 2018 and removing the company car tax advantage was also proposed. The Parliaments agreed on a settlement [88] in line with the Governments proposal. During the same debate the Parliament decided to and asked the Government to initiate a process to transfer the authority for deciding parking fees and access to bus lanes to local authorities and investigate an environmental tariff differentiation for toll roads and ferries. In the 2017 National Budget [89] discussion, the Parliament dismissed the VAT support scheme and re-introduction of the annual tax. The new 2025 target to only sell ZEVs was more important.

Only sells ZEVs from 2025 (2017)

The 2016 National Transport Plan (NTP) set a target [90] of only selling ZEVs from 2025 and use biofuels, to be able to reduce transport GHG emission 50% by 2030 compared to 1990 and support the national 40% GHG emission reduction commitment of the Paris Agreement [91]. Insights came from an Environment Agency expert report [92]. The Government sent the NTP to the Parliament in 2017 [93], which approved it and the ZEV target [94]. The BEV incentives remained in place after this decision had been made.

Exemption from the re-registration tax (2018)

The EV Association proposed [95] an exemption from the re-registration tax in 2014. In the National Budget negotiations for 2017 the Parliament decided [96] to ask to Government to get ESA approval for this

exemption [97], which ESA gave through 2023 [48]. It ws adopted during the National Budget process for 2018 [89]. No expert group report support the decision. The ESA notification and the 2018 National Budget had an impact assessment. It became operational from 2018. The rationale was to reduce the transaction cost and value loss of BEVs. In 2022 it was set to 25% of ICEVs [22] and 100% from 2023 [98].

Keep incentives in place through 2020 (2016/2017)

The BEV market share in 2016 was 1% lower than in 2015. In the National Budget Negotiations for 2017, the Parliament petioned the Government [96] to continue the zero VAT-rates until 2020, introduce an annual tax exemption from 2018 and ask for ESA notification [97], to keep up the momentum towards meeting the 2025 100% ZEV target. The notification was approved by ESA through 2020 [48]. No impact assessment was made, but the ESA notification [99] and decision [48] had a thorough justification.

Right to charge for flat owners in joint properties (2018).

The right to charge for flat owners in parking facilities of undivided joint properties came as a law change in 2017 [100] after a petition from the Parliament to the Government following NGO pressure. The law stated: "A section owner may, with the consent of the board, construct a charging point for electric cars in connection with a parking space available to the section, or other places designated by the board. The board can only refuse to consent if there is a valid reason". Later, a new sentence was added "A section owner who has the right to park on the owner section association's property, but without disposing of his own space, may demand that a charging point be set up for an electric car. The board shall comply with the claim unless there is objective reason to refuse. The board decides where to set up the charging point" [101].

50% rule for road tolls, parking fees and ferry tickets, and acknowledging local authority co-decision (2018)

In the National Budget Negotiations for 2017, the Parliament decided [102] that ZEVs should pay maximum 50% of ICEV rates for toll roads, parking and ferries to reduce local differences, keep a level of ZEV incentives [103] while allowing Municipalities to decide within this limit. Changes to the toll road tariff system [104], the parking regulation [105], and NPRAs National Ferry Tariffs [106] for national main roads followed. It was thus partly a major national law change in national laws, and partly minor administrative changes. No impact assessment were made. The 50% rate for parking was never implemented as the 2017 parking regulation revision had replaced the obligatory exemption with a possibility to offer exemption [107].

Action plan for infrastructure for alternative fuels in transport (2019)

Oslo Municipality funded the first large deployment of chargers from 2008 [108]. A national scheme came in 2009 with 50 mill. NOK financial crisis funding [109,110]. Normal and fast charger deployment has since then been supported by funding agencies Transnova [111], Enova [112], Counties [113] and Municipalities [114,115]. The Governments national alternative fuel infrastructure plan published in 2019 [116] was put in place to develop a coherent alternative fuel infrastructure for transport, and to support the implementation of the EU Dir. 2014/94/EU on infrastructure for alternative fuels [117]. The action plan was in reality an expert group report with a public hearing process. A final plan has not yet been adopted.

Keep incentives in place through 2021 (2020)

A decision to keep the zero VAT rates and the registration tax exemption in place until 2021 came after the 2018 Government declaration [118] had stated this intention and was followed up by an ESA notification [119] to extend the incentives through 2022, which ESA approved [49]. No impact assessment existed, but the notification and ESA decision contained thorough justification.

Strategy for post 2025 vehicle taxation (2020)

Vehicle taxes have provided large Government income and are normally adjusted in small annual steps in the National Budget process to avoid market distortion. Post 2025 vehicle taxation principles were signaled in the National Budget documents for 2021 [21], and in a Climate Policy Bill to the Parliament [120] to provide market actors a long-term perspective. The principles: A sustainable car tax system has a stable tax base, put a price on the external costs of vehicle use, taxes purchase and ownership of vehicles technology neutral, and takes care of distributional effects.

Right to charge for flat owners in housing communities (2020).

The right to get access to charging infrastructure for flat owners was expanded to owners of flats in housing communities in 2020 following a thorough law change process presented in a Bill to the Parliament in 2020 [121], and was included into the law on housing communities in 2021 [122].

Charging infrastructure strategy proposal (2022)

Development of a charging infrastructure strategy was started in 2022, to follow up a Parliament petition [123], that the Government should secure the build out of a comprehensive ZEV infrastructure, which the EVA, NAF and researchers had pointed at as a major barrier to meeting the 2025 national ZEV target [124]. This was raised during the Parliament debate and public hearing [125] over the Climate policy bill [120]. Another Parliament petition asked the Government to develop a national charging infrastructure strategy during 2022 to secure coordination between public authorities and to develop more user-friendly charging infrastructure [126]. An expert group knowledge base report on charging was published in March 2022 [127]. The document was not on a full hearing round but actors were invited to comment on it [128].

Proposal to remove zero rate VAT, replace by support scheme (2023)

This policy change had been suggested in an earlier Expert Group report [129] and by a previous Government [46]. In the revised national budget for 2022 [130] the Government said it intended to replace the zero rate VAT on BEVs with a support scheme, initially equal to the 25% VAT up to a 0.5 million NOK vehicle price, i.e. capped at 125 000 NOK. The incentive would thus move from the National Budget income side balanced by the oil sector income, to the expense side balanced against all other spending. It was stated to be more equitable system for the future. The Parliament decided however in 2022 to keep the VAT exemption in place for BEVs costing up to 500 000 NOK and introduce a VAT on the amount exceeding that sum for more expensive BEVs from 2023 [131], a scheme that will last until 2025.

New weight tax on all vehicles (2023)

This surprise tax on all new vehicles of the weight above 500 kg came came in the National Budget for 2023 [132]. BEVs got, due to added weight, a higher tax than ICEVs. No impact assessment was published.

Removal of reduced re-registration tax incentive (2023)

The re-registration tax incentive was removed in the 2023 National Budget [132] and endorsed by the Parliament [133]. No Impact Assessment was published.

Removal of reduced company car benefit tax (2023)

The reduced company car benefit tax was removed in the 2023 National Budget [132] and endorsed by the Parliament [133]. No Impact Assessment was published.

Overview of BEV incentives introduction and revision timelines

The policy processes in sections 3.1 to 3.3 resulted in the timeline for the BEV incentives shown in table 1.

Table 1. Timeline of the main incentives and their 2023 status

| Incentive | Intro-duction | 1st major revision | 2nd major revision | 3rd major revision | 4th major revision | Status 2023 |
|---|---|---|---|---|---|---|
| Registration tax exemption | 1990, temporary | 1996 permanent | | | | Weight tax element introduced |
| Annual tax exemption | 1996 | 2004 partial reduction | 2018, BEVs fully exempted, changed to tax on insurance | 2021 partial reduction | 2022 full tax | Full tax as for ICEVs |
| Zero rate VAT purchase | 2001 | | | | | Full VAT on the part of the price exceeding 500000 NOK |
| Zero rate VAT leasing | 2015 | | | | | Full VAT on the part exceeding 500000 NOK purchase price |
| Re-registration tax exemption | 2018 | 2022: 25% of ICEVs rate | | | | Full tax as for ICEVs |
| Reduced company car benefit tax | 2000 | 2005: new tax system, BEV 75% of ICEV | 2009: 50% of ICEV | 2018: 60% of ICEV | 2022: 80% of ICEV | Full tax as for ICEVs |

| Incentive | Intro-duction | 1st major revision | 2nd major revision | 3rd major revision | 4th major revision | Status 2023 |
|---|---|---|---|---|---|---|
| Parking fees exemption | 1999 | 2017: local authorities can decide | 2018: BEV 50% of ICEV | | | The 50% max rate still not implemented |
| Road tolls exemption | 1997 | 2018: Max 50% of ICEV, local authority decide within boundary | | | | Max rate for BEVs 70% of ICE rate |
| Reduced ferry rates | 2009, national car ferries | 2018: Max 50% of ICEV, ferry operators to decide within boundary. | | | | 50% of ICE rate, but ferry operators to decide within that boundary. |
| Access to bus lanes | 2003 Oslo area test | 2005 national | 2015: a passenger to be in the car in rush hours, local authority decision | | | A passenger has to be in the car in the rush hours or always, up to local authority decision |

# 4 Discussion

Structured policy processes were most often not followed up to 2010 as seen by the historical account in sections 3.1 to 3.3, the process flows for policy developments in figure 2, and the evaluation in table 2. The 1990s was about market testing, which could explain the lax prosesses. The bus lane access was a proper prosess, a real life experiment in the greater Oslo-area for two years prior to opening up for access elsewhere. The free parking incentive which was decided by the government following pressure from stakeholders, but then followed a traditional law change process for the parking regulation. From 1999, the policies were aimed at supporting Norwegian BEV industry, a prime political interest, whihc could explain the lax processes up to 2010. After 2010, the decision to keep incentives in place until 50000 BEVs/through 2015 was the result of a debate in the Parliament without an impact assessment, but most 2010-2021 policy processes were proper. The 2022-2023 downscaling of incentives lacked proper impact assessments.

The reasons for the lack of proper policy processes up to 2010 can be excused from a lack of knowledge [9], and that it was clear that BEVs would have been uncompetitive without incentives [6] due to low volumes and high production costs, even for mini vehicles, an unpopular segment. The loss of tax income was low the year the incentives were introduced and the coming years, while the political visibility and gain was high. Several incentives came during late night Parliament negotiations over the national budget (Table 2, policy nr. 4,8,18) or were directly decided in the Parliament (Table 2, policy nr. 5,26), and thus not “prepared” by the Government. No impact assessments are found in Government or Parliament documentation of such incentives. In some cases, only a sentence shows the decision was made. The temporary registration tax exemption became for instance permanent by not commenting on it when a vehicle taxation reform was decided by the Parliament. Incentives affecting counsumers requiring a law change went through proper processes that allowed concerns of relevant groups to be heard (Table 2, policy nr. 6,27,29). Most policy processes after 2010 have been properly executed (Table 2, policy nr. 22,23,25), but there are still examples of new policies proposed by the Government that lack a proper impact assessment or hearing (Table 2, policy nr. 24,30,35,36,37,38). Research based knowledge and models are now available that could have supported such decisions, and have consistently been used to get EFTA urveillance authority (ESA) approval for elongation of incentives from 2015. The lack of documentation of decisions and proposed changes is now related to the market impacts of downscaling incentives, a heavily debated topic in Norway. Research based knowledge could have been used to device a downscaling plan but is not used by the Government. The impact of downscaling on the ability to reach the national target of only selling ZEVs from 2025 has thus not been assessed in the public domain. Counterforces such as the EVA have utilized the lack of knowledge based change processes to fight against policy changes with considerable success. Another factor behind the stamina of the Norwegian BEV incentives and policies and the lack of proper evaluation is that the large income from the oil sector made it possible to keep the incentives in place without having to heavily weigh them against other political causes, i.e. “there has been money for everything” [9]. The lack of processes and documentation of impacts and cost could actually be one of the primary reasons why the BEV market in Norway has become world leading. More and more incentives were introduced until a market impact was seen, which led to more ambitious targets requiring continued incentives to be reachable. A recommendation for improved policy processes is to introduce incentives as part of a long term plan with regular reviews of the progress and evaluation of need for incentives, supported by research based knowledge. An up to date

broad specter of incentives and policies should be evaluated by Researchers, Ministeries and the Civil Services and kept up to date to enable policians to make better informed decisions even during late night negotiations in the Parliament, which they likely will continue to make in the foreseeable future.

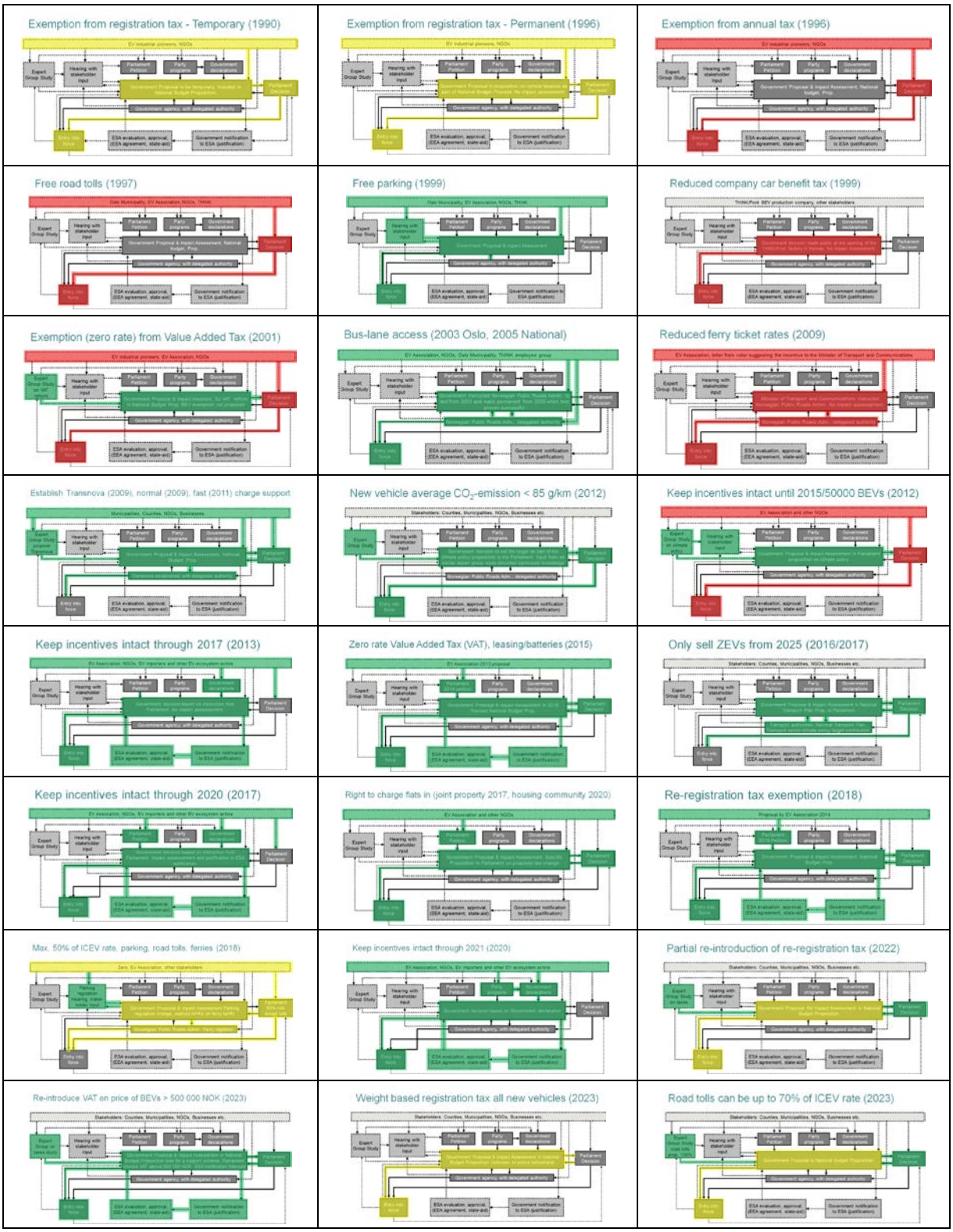


Figure 2 Policy development process flows. Green = Ok, Yellow = Inadequate, Red= Poor

Table 2 BEV policies/incentive processes. Green=Normal, Yellow= Deviations Red= Improper. Source: Author.

| Nr | BEV policy | Type | Year decided | Year effective | Effect | Market impact | Impact assess. | Process |
|---|---|---|---|---|---|---|---|---|
| 1 | Registration tax exemption, temporary | Tax | 1989 | 1990 | Market pull incentive | High | No | National Budget Docum. |
| 2 | Km tax exemption | Tax | 1989 | 1990 | Market pull incentive | Low | No | National Budget Docum. |
| 3 | Registration tax exemption, permanent | Tax | 1995 | 1996 | Market pull incentive | High | No | Gov.Prop. to Parliament |
| 4 | Annual tax exemption | Tax | 1995 | 1996 | Market pull incentive | Medium | No | National budget debate |
| 5 | Toll road exemption | Fee/Law | 1997 | 1997 | Market pull incentive | High | No | Parliament law change |
| 6 | Parking fee exemption | Fee/Law | 1999 | 1999 | Market pull incentive | Medium | Yes | Law change w. hearing |
| 7 | Reduced company car benefit tax | Tax | 1999 | 2000 | Market pull incentive | Low | No | National Budget Docum. |
| 8 | Zero rate VAT BEV purchase | Tax/Law | 2000 | 2001 | Market pull incentive | High | No | National Budget Process |
| 9 | Access to bus lanes Oslo area (test 2003-2005) | Adm. | 2003 | 2003 | Market pull incentive | High | No | Real life test |
| 10 | Access to bus lanes Norway (Oslo test success) | Adm. | 2005 | 2005 | Market pull incentive | High | No | Experience from test |
| 11 | New car average $CO_2$-emiss.<120 g/km 2012 | Target | 2007 | 2012 | Supporting incentives | Low | No | |
| 12 | Increased car cost allowance business trips | Adm. | 2008 | 2008 | Cost compensation | Low | No | |
| 13 | Ferry ticket price reduction | Adm. | 2008 | 2009 | Market pull incentive | Medium | No | Government process |
| 14 | Creation of TRANSNOVA funding agency | Adm. | 2009 | 2010 | Barrier reduction | Medium | Yes | National Budget Docum. |
| 15 | Transnova national support normal chargers | Adm. | 2009 | 2010 | Barrier reduction | Low | No | Parliament Propositon |
| 16 | Transnova national support for fast chargers | Adm. | 2010 | 2011 | Barrier reduction | High | No | Transnova deleg. decision |
| 17 | New car average $CO_2$-emiss. <85 g/km 2020 | Target | 2012 | 2020 | Supporting incentives | Medium | | |
| 18 | Keep incentives through 2015, to 50000 BEVs | Decision | 2012 | 2015 | Market stability | High | No | |
| 19 | Keep incentives in place through 2017 | Decision | 2013 | 2017 | Market stability | High | No | |
| 20 | TRANSNOVA assimiliation into ENOVA | Adm. | 2014 | 2015 | More resources avail. | High | | |
| 21 | TRANSNOVA strategy fast chargers | Adm. | 2015 | 2016 | Barrier reduction | High | No | |
| 22 | Zero rate VAT BEV leasing/and batteries | Tax/Law | 2015 | 2015 | Market pull incentive | Low | Yes | |
| 23 | Only sell ZEVs from 2025 | Target | 2017 | 2025 | Supporting incentives | High | No | |
| 24 | Keep incentives in place through 2020 | Decision | 2017 | 2020 | Market stability | High | Yes | |
| 25 | Re-registration tax exemption | Tax | 2017 | 2018 | Market pull incentive | Low | Yes | |
| 26 | Max. 50% of ICEV for parking, road toll, ferry | Fee/Law | 2017 | 2018 | Incentive reduction | Medium | No | |
| 27 | Right to charge, flats jointly owned properties | Law | 2017 | 2018 | Barrier reduction | Low | Yes | |
| 28 | Action plan alternative fuels infrastructure | Strategy | 2019 | n/a | Barrier reduction | Low | No | |
| 29 | Right to charge, flats in housing communities | Law | 2020 | 2021 | Barrier reduction | Low | Yes | |
| 30 | Keep incentives in place through 2021 | Decision | 2020 | 2021 | Market stability | High | Yes | |
| 31 | Policy strategy for post 2025 vehicle taxation | Strategy | 2020 | 2025+ | Market stability | Low | | |
| 32 | Partial re-introduction of re-registration tax | Tax | 2021 | 2022 | Incentive reduction | Low | | |
| 33 | Charging infrastructure strategy proposal | Strategy | 2022 | n/a | Barrier reduction | Low | | |
| 34 | Re-introduce VAT price above 500 kNOK | Tax/Law | 2022 | 2023 | Incentive reduction | Medium | Yes | National budget doc. |
| 35 | Full re-registration tax | Tax | 2022 | 2023 | Incentive removal | Medium | Yes | National budget doc. |
| 36 | Weight based registration tax new vehicles | Tax | 2022 | 2023 | Incentive reduction | Low | Yes | National budget doc. |
| 37 | Reintroduction full company car benefit tax | Tax | 2022 | 2023 | Incentive removal | Low | No | National budget doc. |
| 38 | Road tolls can be up to 70% of ICEVs rates | Fee/Law | 2022 | 2023 | Incentive reduction | Medium | No | National budget doc. |

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Reference 10-133 have been truncated due to 12 page paper restriction.

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