

# The Electoral System in Denmark

## Parliamentary Elections

Parliamentary elections are governed by two main principles: election by a majority vote in single-member constituencies and election by proportional representation. Election by a majority vote in single-member constituencies is the oldest form and rests on the assumption of the country being subdivided into constituencies. Candidates obtaining a majority of votes in individual constituencies are elected whereas all votes for the other candidates are lost. Election by proportional representation means that each party gets seats in Parliament corresponding to their number of votes. Election by proportional representation does not assume any subdivision into constituencies. There is a wide mix in between these two electoral systems in their purest form.

The advantage of election by a majority vote in single-member constituencies is the close relationship between the constituency and the elected candidate: each constituency has one and one parliamentary representative only. The disadvantage of this system is that the parliamentary composition does not reflect the opinions and attitudes of the electorate, as this system favours the big parties.

Election by proportional representation has the advantage that the parliamentary composition reflects the opinion and attitudes of the electorate. The disadvantage is that the relationship between voters and elected candidates is less close.

The Danish electoral system aims to preserve the better parts of the two systems: mathematical equity and local candidate relations. When introducing election by proportional representation in 1920, this was the background for maintaining the previous constituencies – yet only as nomination districts – and introducing the concept of compensatory seats in the whole country.

### Provisions of the Constitutional Law

While the Parliamentary Elections Act regulates the election system, the main principles on franchise, eligibility and election procedures are stipulated in the Constitutional Act of the Kingdom of Denmark of 1953. This article deals only with the aspect of the election procedures that are concerned with the *computation of the election*.

Part 4 of the Constitutional Act provides as follows:

- Parliament shall consist of a maximum of 179 members;
- Parliament shall be elected by general, direct and secret ballot, using proportional representation;
- Seat allocation shall consider the local number of inhabitants, electorate and population density;
- Parliament shall be elected for a term of four years;
- Seats shall be valid until a new election has taken place;
- Parliament itself shall decide the validity of the election of its own members;
- The King shall be entitled to issue writs for a new election to the effect that existing seats are no longer valid once the election has taken place.

The Constitutional Act entrusts Parliament with laying down rules for the execution of the franchise and the election procedures.

It follows from the provision by which the King is entitled to issue writs for a new election that the tenor of the Constitutional Act overrules any time limits specified in the Parliamentary Elections Act, if elections are called

at short notice. The minimum time required between initiating and holding a general election is therefore determined purely by practical considerations.

### **Electoral Threshold**

By international standards the Danish electoral system proves to be one of the most equitable in mathematical terms. This does not say that it is purely mathematically equitable for section 77 of the Parliamentary Elections Act on the allocation of compensatory seats to the parties contains specifics on what is widely known as the *threshold*.

For a party to share in the compensatory seats it must either

- have obtained at least one constituency seat;
- have obtained, in two out of three provinces, at least as many votes as the average number of valid votes cast in the province for each constituency seat; or
- have obtained two per cent of the total number of valid votes cast in the whole country.

### **The "Local" Allocation of Seats**

For electoral purposes, Denmark is divided into three provinces: Metropolitan Copenhagen, Sealand-Southern Denmark, and Northern and Central Jutland. The provinces are subdivided into multimember constituencies, thus Metropolitan Copenhagen is subdivided into four multimember constituencies, Sealand-Southern Denmark as well as Northern and Central Jutland are both subdivided into three multimember constituencies. These multimember constituencies are subdivided into 92 nomination districts. The nomination districts have no significance in terms of seat allocation, but they are relevant to the selection of candidates.

#### [Map of Parliamentary Constituencies as of 1 January 2007](#)

Of the nationwide 75 seats, 135 are constituency seats and 40 are compensatory seats. This proves to show that the number of constituency seats and the number of nomination districts are not identical. In compliance with the provisions of the Constitutional Act stipulating that local seat allocation shall consider the number of inhabitants, electorate and population density, the 135 constituency seats are distributed among the provinces and multimember constituencies every five years. The 40 compensatory seats are distributed among the provinces at the same time.

A simple calculation of ratios is used for the distribution: the population, registered voters in the previous election and the area in square kilometres multiplied by 20 in each province are summed up for each province, and the ratios between them are established; the 175 seats are distributed by means of these ratios. The same ratios are used for the distribution of 135 constituency seats among the provinces. The difference between the 175 and 135 seats naturally represents the distribution of compensatory seats.

After seats have been distributed among the provinces, the constituency seats of individual provinces are distributed on the multimember constituencies. Again, ratios are used, calculating the sum of the population, number of voters, and area in square kilometres multiplied by 20 in each multimember constituency. If, in this last calculation, the island of Bornholm does not obtain two constituency seats, it is pre-allocated two constituency seats before a renewed calculation on the basis of the remaining 133 constituency seats.

As intricate and confusing as this whole exercise may seem, it works to ensure that the distribution of seats reflects developments in the population. In addition, ensuring that thinly populated areas are provided with equitable representation has been politically desirable. The reason for multiplying areas by 20 is that it makes the overall result fall within politically acceptable limits.

## Computation of Elections

Computation of elections falls into two parts: 1) allocation among parties and 2) allocation among the individual candidates. The allocation among parties is the same for all parties and is completed on the evening of the election day. The allocation among the individual candidates is more complex as it varies from one party to another, depending on the form of list organisation used. One or two days are needed for the personal votes to be counted before the return of elected candidates can be announced.

### 1. Allocation of Seats among Parties

#### A. Allocation of Constituency Seats among Parties

The distribution of constituency seats undertaken before the election indicates how many constituency seats are to be allocated in each multimember constituency. After the election, votes cast for the parties are counted in each multimember constituency. Each of the numbers of votes counted is divided by the divisors 1 – 2 – 3 – 4 – 5 – and so on (the d'Hondt formula). The largest of the established quotients entitles the party to which it is allotted, to the first constituency seat, the second largest quotient authorises the second constituency seat and so on. Table 1 shows the allocation of constituency seats.

**Table 1: Allocation of Constituency Seats Among the Parties**

<b>X multimember constituency</b>				
<b>Constituency seats:</b>				
Parties	A	B	C	D
Votes	12,000	21,000	33,000	45,000
Div. 1	<sup>1)</sup> 12,000	<sup>4)</sup> 21,000	<sup>2)</sup> 33,000	<sup>1)</sup> 45,000
Div. 2	6,000	<sup>10)</sup> 10,500	<sup>5)</sup> 16,500	<sup>3)</sup> 22,500
Div. 3		7,000	<sup>9)</sup> 11,000	<sup>6)</sup> 15,000
Div. 4			8,250	<sup>8)</sup> 11,250
Div. 5				9,000
Total constituency seats	1	2	3	4

#### B. Allocation of Compensatory Seats

##### 1) Allocation of compensatory seats among the parties

After the allocation of constituency seats has been completed, nationwide computations establish how many seats the parties are eligible for on the condition that they have met the requirements of section 77 of the Parliamentary Election Act:

The aggregate number of parties' votes is divided by their total number of seats, usually 175. The established quotient is divided into the number of the parties' votes, which determines how many seats each party may claim. The difference between the total number of seats to which each party is entitled, and the number of constituency seats that it has obtained in all multimember constituencies is equivalent to the party's compensatory seats.

##### 2) Allocation of Parties' Compensatory Seats Among the Provinces

We now know how many nationwide compensatory seats each party is entitled to, and from the pre-election distribution of seats we know how many compensatory seats are allotted to each province. From the allocation of constituency seats among the parties we also know how many constituency seats a party has obtained in each province. The allocation of parties' compensatory seats among the provinces adheres to the following procedure:

The number of parties' votes eligible for sharing in the compensatory seats is computed within the three provinces, and the numbers of votes are divided by the divisors 1 – 3 – 5 – 7 – and so on (the Sainte-Lagué formula). The outcome of this operation is a series of quotients. For each party in each province as many as the largest quotients as correspond to the number of the party's constituency seats received in the province are to be removed from these quotients. The non-included quotients are indicated by a cross in Table 2 below. When a party or a province has obtained the number of compensatory seats for which it qualifies, allocation to the relevant party or province is arrested, regardless of a province being able to demonstrate unused quotients larger than the quotients triggering election in the other two provinces. Table 2 shows a simplified illustration of the allocation procedure.

Table 2 shows that at the national level there is a total of 60 seats for allocation, 50 of which are constituency seats and 10 are compensatory seats, and the seats are distributed among the three provinces as indicated. Party A has obtained two constituency seats in Sealand-Southern Denmark and another two constituency seats in Northern and Central Jutland, and is further eligible for two compensatory seats. Party B has obtained three constituency seats in Metropolitan Copenhagen, four constituency seats in Sealand-Southern Denmark and three seats in Northern and Central Jutland, and is further eligible for two compensatory seats. Party C has obtained five constituency seats in Metropolitan Copenhagen, five constituency seats in Sealand-Southern Denmark and four constituency seats in Northern and Central Jutland, and is further eligible for two compensatory seats. Party D has obtained six constituency seats in Metropolitan Copenhagen, eight constituency seats in Sealand-Southern Denmark and eight constituency seats in Northern and Central Jutland, and is further eligible for four compensatory seats.

In the example seen in Table 2 Metropolitan Copenhagen has two "unused" quotients, which are larger than quotients qualifying for election in the other two provinces, and one "unused" quotient larger than quotients qualifying for election in Sealand-Southern Denmark. Northern and Central Jutland has 1 "unused" quotient larger than a quotient qualifying for election in Sealand-Southern Denmark.

**Table 2: Allocation of Parties' Compensatory Seats Among the Provinces**

	Metropolitan Copenhagen 2 compensatory seats 14 constituency seats				Sealand-Southern Denmark 5 compensatory seats 19 constituency seats				Northern and Central Jutland 3 compensatory seats 17 constituency seats			
	A	B	C	D	A	B	C	D	A	B	C	D
Votes	3,000	14,500	22,100	29,000	11,000	16,500	21,500	36,500	9,500	14,000	18,500	35,500
Div.												
1	3,000 <sup>1)</sup>	x	x	x	x	x	x	x	x	X	x	x
3	1,000	x	x	x	x	x	x	x	x	X	x	x
5		x	x	x	2,200 <sup>3)</sup>	x	x	x	1,900	X	x	x
7		2,071	x	x	1,571	x	x	x		2,000 <sup>7)</sup>	x	x
9			x	x		1,833 <sup>10)</sup>	x	x		1,556	2,056 <sup>6)</sup>	x
11			2,009	x		1,500	1,955 <sup>8)</sup>	x			1,682	x
13				2,231 <sup>2)</sup>			1,654	x				x
15				1,933				x				x
17								2,147 <sup>4)</sup>				2,088 <sup>5)</sup>
19								1,921 <sup>9)</sup>				1,868
21								1,738				

### 3) Allocation of Parties' Compensatory Seats Among Multimember Constituencies

We now know how many compensatory seats each party receives in each province. Next we are going to allocate the compensatory seats among the multimember constituencies. For distribution purposes we use the divisors 1 – 4 – 7 – 10 – and so on. For each party in each multimember constituency as many of the largest quotients as correspond to the individual party's number of constituency seats received in the

multimember constituency are to be removed from the largest quotients. Table 3 shows a simplified illustration of the allocation procedure. From the example in Table 2 we know that party D is entitled to two compensatory seats in Sealand-Southern Denmark. They are allocated to the party in the multimember constituencies of Sealand and Funen.

**Table 3: Allocation of Compensatory Seats Among Multimember Constituencies**

	Sealand	Funen	Southern Jutland	Total
Party D				
Constituency seats:	3	2	3	10
Votes	14,200	10,000	12,300	36,500
Div. 1	X	X	X	
Div. 4	X	X	X	
Div. 7	X	1,429 <sup>1)</sup>	X	
Div. 10	1,420 <sup>2)</sup>	1,000	1,230	
Div. 13	1,092			

### Applied Formulas

The allocation of constituency and compensatory seats is largely determined by the formulas applied. The allocation of constituency seats, Table 1, effective for elections held as from 2007, relies on the d'Hondt formula (1 – 2 – 3 – 4 – 5 – and so on). This formula was also used in the 1920 to April 1953 elections but after the Constitutional Act was amended in 1953 and until the end of 2006 (last time in 2005) returns were based on the modified Sainte-Laguë formula (1,4 – 3 – 5 – 7 – and so on).

Changing to the modified Sainte-Laguë formula in 1953 served the purpose of ensuring that the increase in the number of constituency seats (from 105 to 135) and the reduction in the number of compensatory seats (from 44 to 40) introduced at the same time, did not have the effect that a party could obtain more constituency seats than its total votes made it qualify for. The modified Sainte-Laguë formula, which to a greater extent than the d'Hondt formula benefits minor parties, was for this reason considered the better option.

The re-introduction of the d'Hondt formula effective from 2007, had the purpose of ensuring that the new constituency division whereby the previous 17 multimember and county constituencies were replaced by 10 new multimember constituencies, makes it neither easier nor more difficult to obtain representation in Parliament, merely by obtaining a constituency seat. Fewer multimember constituencies and thus more constituency seats for allocation in individual multimember constituencies would, all things being equal, had the modified Sainte-Laguë formula for allocation of constituency seats been preserved, have made it easier to obtain representation in Parliament, merely by obtaining a constituency seat.

The allocation of the parties' compensatory seats among the provinces – Table 2 – is based on the Sainte-Laguë formula (1 – 3 – 5 – 7 – and so on). This formula was introduced at the same time as the 1920 election act for being considered superior in terms of ensuring a geographic distribution of seats.

The allocation of a party's compensatory seats among individual multimember constituencies – Table 3 – is based on the divisors 1 – 4 – 7 – 10 – and so on. This formula was introduced in 1953 and aims to make it more difficult for multimember constituencies that have already obtained a constituency seat to share in the compensatory seats, thus ensuring a larger spread of compensatory seats among the multimember constituencies than the previous formula would entail.

## 2. Selection of Candidates

From the allocation of constituency and compensatory seats among the multimember constituencies we know that Party X is entitled to one constituency seat in multimember constituency Y. This party has

nominated five candidates, but which person fills the seat depends on the form of list organisation that the party has chosen.

There are two principal forms of list organisation for candidates: standing by district and standing in parallel:

- In **standing by district** each nomination district has its own candidate. The candidate is allotted all the votes cast for the party in the nomination district plus the personal votes cast for him or her in all the nomination districts of the multimember constituencies. The size of the nomination district, i.e. the number of voters, therefore plays an important role.

It is possible to combine standing by district with a party list, in which Party X has registered a fixed order for its candidates in a multimember constituency. The votes are calculated in the same way as above, but voters can only change the order of the party list if a candidate further down the list obtains a very large number of personal votes, or stands in a nomination district with an especially large number of party votes. For a candidate to be elected he/she must obtain a so-called distributional number produced by dividing the total number of party votes in the multimember constituency by a number which is one integer higher than the number of seats obtained by the party in the multimember constituency. The established number is increased to the next integer, even if itself an integer, hence constituting the party's distributional number in the multimember constituency. If none of the candidates obtains the distributional number, the candidates are elected in the order of the party list. This procedure gives the party nearly complete influence as to who is elected, and breaking the list always receives news coverage.

- In **standing in parallel** all the party's candidates in the same multimember constituency are presented in all nomination districts. Personal votes are very nearly crucial as votes cast for the party in individual nomination districts are allotted in strict proportion to the number of individual votes cast for the independent candidates in each nomination district. In an attempt to preserve the close relationship between nomination district and parliamentary member, each nomination district has a "nominated" candidate. This only affects the appearance of the ballot paper in the sense that the nominated candidate is at the top of the party's list on ballot paper. Tables 4 and 5 illustrate how these forms of list organisation influence the selection of candidates.

Table 4 below shows each candidate's number of personal votes in individual nomination districts. The asterisk \* indicates the nomination districts in which the candidates are standing/nominated. The tabulation of the party votes is based on the assumption that the candidates are standing by district, see above.

**Table 4: Allocation of Votes in Standing by District**

	Fjordby	Sundby	Aaby	Færgeby	Broby	Personal votes	Party votes	Total
Andersen	180	150	60	120	250*	760	1600	2360
Hansen	20	60*	20	20	10	130	1700	1830
Jensen	200	300	550*	300	360	1710	1650	3360
Nielsen	650*	75	50	110	120	1005	2400	3405
Petersen	50	15	20	50*	10	145	1400	1545
Personal votes in constituency	1100	600	700	600	750	3750		
Party votes	2400	1700	1650	1400	1600		8750	
Total constituency votes	3500	2300	2350	2000	2350			12,500
Distributional number:	6251							

In *standing by district* the number of personal votes in individual nomination districts plus the number of party votes in the candidate's own nomination district are conclusive. Thus **Nielsen** is elected by 3,405 votes in view of the very large number of party votes (2400).

If *the party is standing by district with a registered party list*, the candidate obtaining the distributional number of 6,251 is elected. If none of the candidates obtains the distributional number, the candidates are elected in

the order of appearance in the party list. In the distribution of votes in Table 4 none of the candidates obtains the distributional number, and **Andersen** is therefore elected because he is at the top of the party list.

In *standing in parallel* the party votes in the individual nomination districts are distributed in proportion to the personal votes obtained by the candidates in each nomination district. For each independent candidate in each nomination district, the distribution is calculated by multiplying the personal votes cast for the candidate in the district by the total number of party votes in the district, and dividing it by the total number of personal votes in the district. Fractions often appearing in this computation are disregarded at first, and the votes are distributed according to whole numbers, without rounding up. After the initial distribution a number of votes for each nomination district will be left over. The second time round, they are distributed by nomination districts by the method of major fractions and the candidate that has the largest fraction is allotted the first remaining vote, the candidate with the second largest fraction is allotted the next vote and so on, until all remaining party votes have been distributed. If the vote has to be distributed among several candidates holding the same fraction, lots shall be drawn.

By this calculation the distribution of party votes for the two candidates obtaining the largest number of personal votes, Jensen and Nielsen, will be as follows: Jensen gets 4,051 party votes + 1,710 personal votes = 5,761 votes, and Nielsen gets 2,262 party votes at first and is allotted a further two of the remaining votes by the method of major fractions = 2,262 + 1,005 personal votes = 3,267 votes. **Jensen** is elected! The calculations appear from Table 5 below:

**Table 5 – Calculation of Party Vote Distribution by the Formula: Personal Votes \* Total Number of Party Votes / Total Number of Personal Votes + Method of Major Fractions**

	Fjordby	Sundby	Aaby	Færgeby	Broby	Personal votes	Party votes	Total
Andersen	392.72.. = 393	425	141.428.. = 141	280	533.33.. = 534****)	760	1773	2533
Hansen	43.63.. = 44	170	47.1428.. = 47	46.66.. = 47***)	21.33.. = 21	130	329	459
Jensen	436.36 = 436	850	1296.428.. = 1297**)	700	768	1710	4051	5761
Nielsen	1418.18.. = 1418	212.5 = 213*)	117.85 = 118	256.66.. = 257***)	256	1005	2262	3267
Petersen	109.09.. = 109	42.5 = 42	47.14 = 47	116.66.. = 116	21.33.. = 21	145	335	480
Personal votes in the district	1100	600	700	600	750	3750		
Party votes	2400	1700	1650	1400	1600		8,750	
Total votes in the district	3500	2300	2350	2000	2350			12,500

\*) Nielsen and Petersen hold equal fractions, calling for lots to be drawn in regard of the last party vote, which by allotment falls to Nielsen.

\*\*) Andersen and Jensen hold equal fractions, calling for lots to be drawn in regard of the last party vote, which by allotment falls to Jensen.

\*\*\*) Hansen, Nielsen and Petersen hold equal fractions, calling for lots to be drawn in regard of the last two party votes, which by allotment fall to Hansen and Nielsen.

\*\*\*\*) Andersen, Hansen and Petersen hold equal fractions, calling for lots to be drawn in regard of the last party vote, which by allotment falls to Andersen.

Table 6 compares the outcome of these three forms of list organisation, and the elected candidates and the order of their substitutes are indicated:

**Table 6: Elected Candidates and Substitutes in the Three Forms of List Organisation**

	Standing by District	Standing by District, Party List	Standing in Parallel
Andersen	Substitute 2	Elected	Substitute 2
Hansen	Substitute 3	Substitute 1	Substitute 4
Jensen	Substitute 1	Substitute 2	Elected
Nielsen	Elected	Substitute 3	Substitute 1
Petersen	Substitute 4	Substitute 4	Substitute 3