Swedish Opinion on Nuclear Power 1986 – 2013

Sören Holmberg May 2014

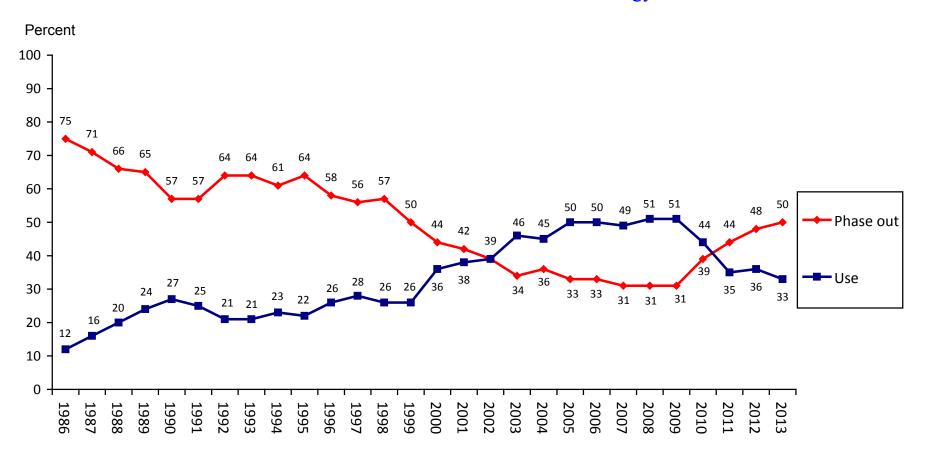






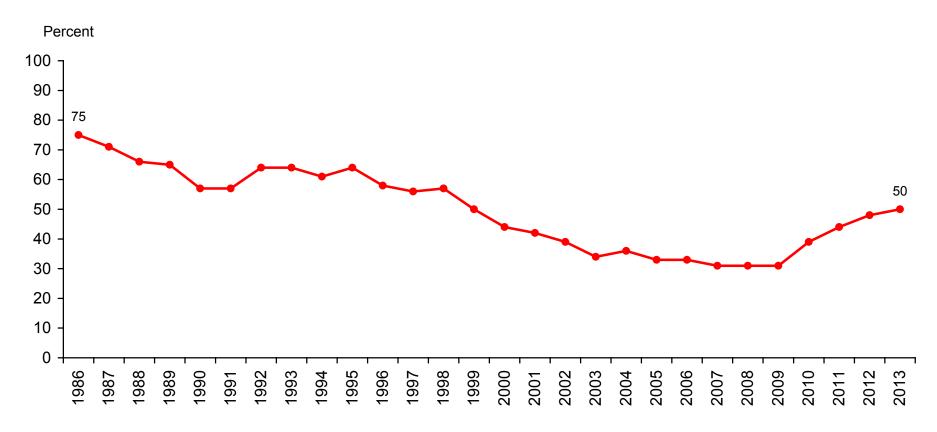
The Research Project Energy Opinion in Sweden Financed by Swedish Energy Agency

Swedes on the Use of Nuclear Power as an Energy Source



Data: The SOM Institute, University of Gothenburg; Annual nationwide surveys in Sweden; Sample size 3 000 persons 16–85 years old; Mail questionnaires with an average response rate of 60 percent. The survey question asks about Swedes' opinion on the use/long term use of nuclear power as an energy source in Sweden. Response alternatives, including a "no opinion" alternative, are phrased as fairly concrete policy proposals and have varied some over the years (see Appendix). The number of substantial response alternatives was five up until 1996/97, but there after reduced to four. The words "use nuclear power" and "phase out nuclear power" has all the time been used in the response phrasings, making it possible to distinguish between people in favour of using nuclear power versus people in favour of phasing out nuclear power. Changes in question wording occurred between the years 1986-1987 (to question A), 1997-1998 (from question A to B), 1999-2000 (from question B to C), 2004-2005 (from question C to D) and 2009-2010 (from question D to E). See the Appendix for further details. In the figure, the old five substantial response alternative-question is used up until 1997 and after that the new four substantial response alternative-question starting in 1998. In 1986, the "don't know" response was left out; therefore the results for this year have been adjusted. The actual results were 84 percent "abolish", 13 percent "use" and 3 percent no answer. Comment: All respondents are included in the percent calculations.

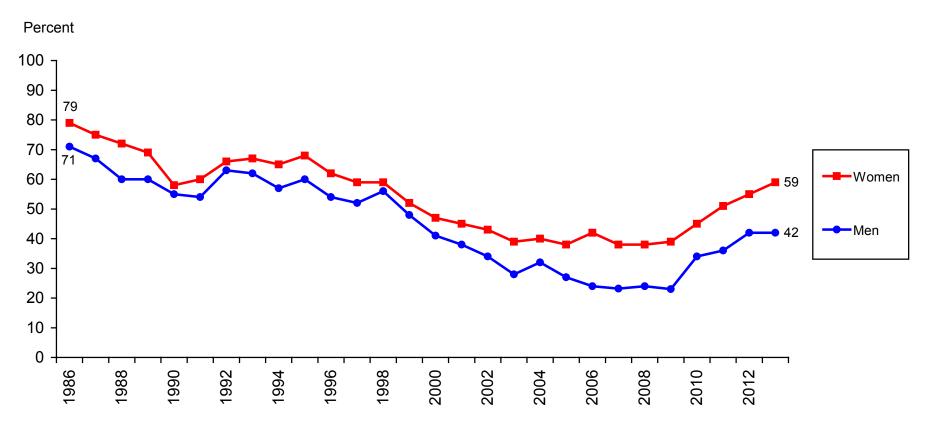
Percent Swedes in Favour of Phasing Out Nuclear Power



Data: The SOM Institute, University of Gothenburg; Annual nationwide surveys in Sweden.

Comment: All respondents are included in the percent calculations.

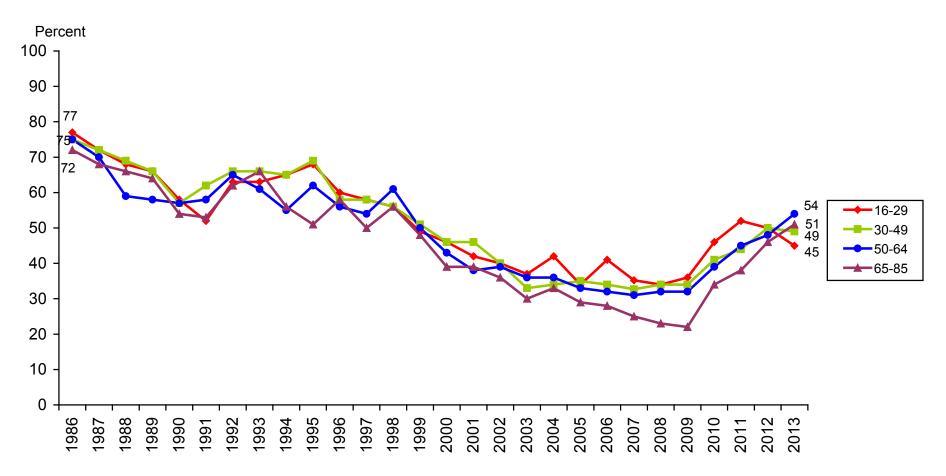
Percent in Favour of Phasing Out Nuclear Power among Swedish Women and Men



Data: The SOM Institute, University of Gothenburg; Annual nationwide surveys in Sweden.

Comment: All respondents are included in the percent calculations.

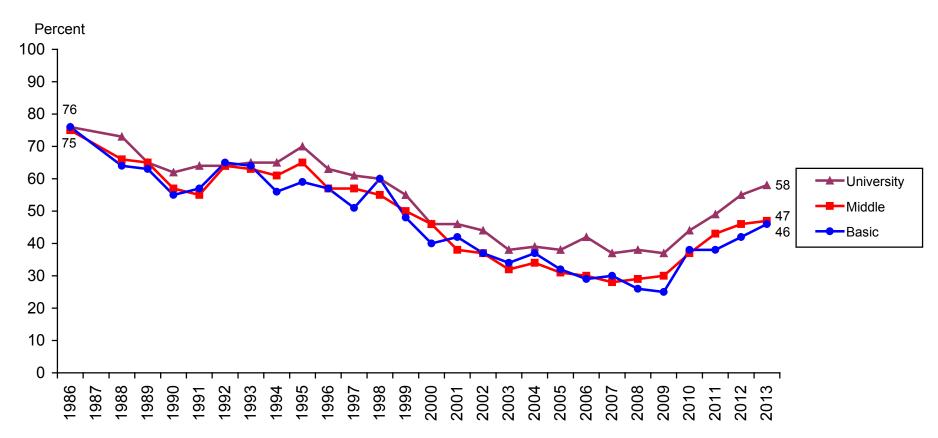
Percent in Favour of Phasing Out Nuclear Power among Swedes in Different Age Groups



Data: The SOM Institute, University of Gothenburg; Annual nationwide surveys in Sweden.

Comment: All respondents are included in the percent calculations.

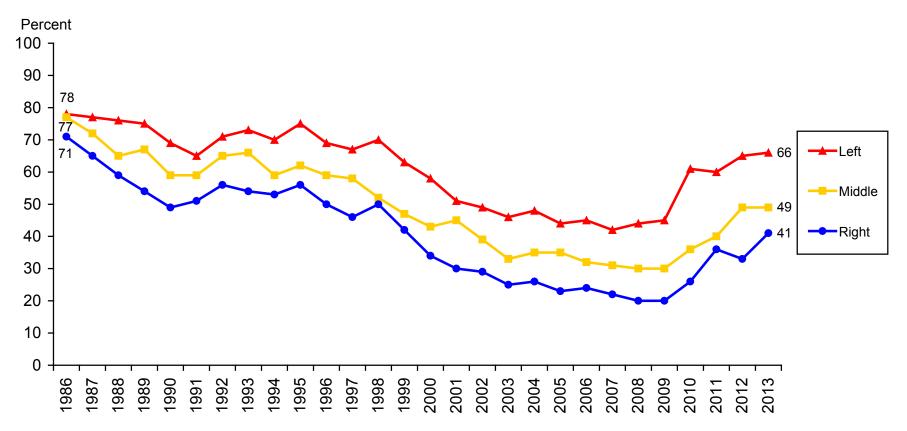
Percent in Favour of Phasing Nuclear Power among Swedes in Different Educational Groups



Data: The SOM Institute, University of Gothenburg; Annual nationwide surveys in Sweden.

Comment: All respondents are included in the percent calculations.

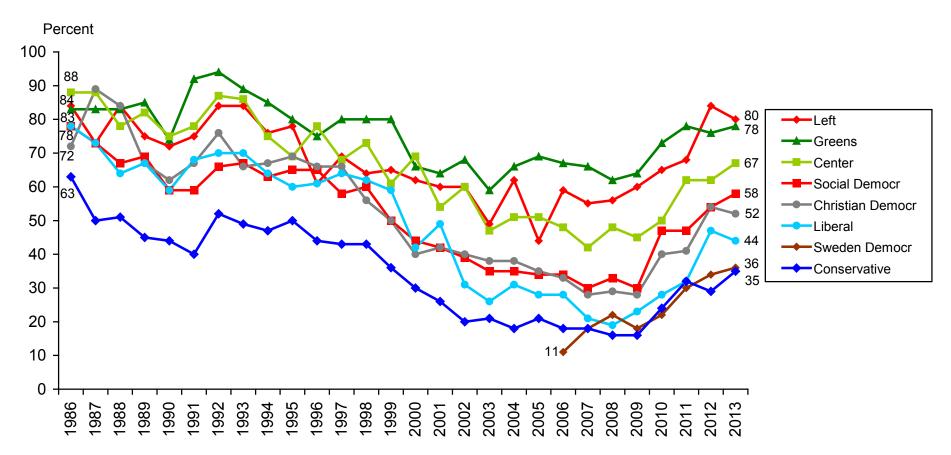
Percent in Favour of Phasing Out Nuclear Power among Swedes with Different Ideological Self-Placements



Data: The SOM Institute, University of Gothenburg; Annual nationwide surveys in Sweden.

Comment: All respondents are included in the percent calculations.

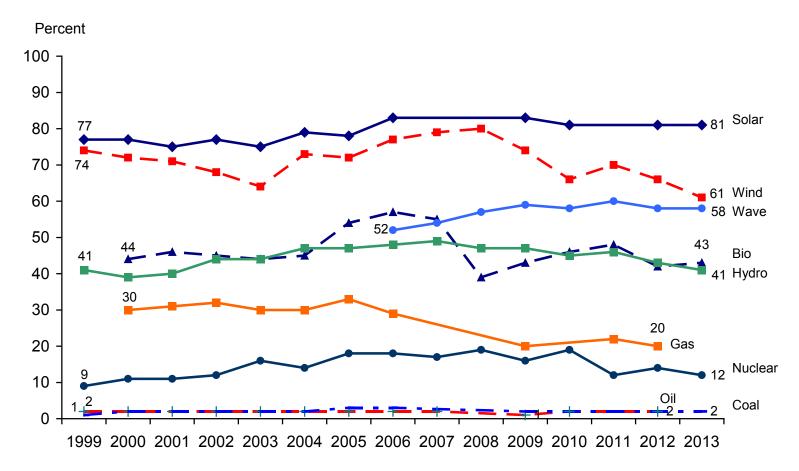
Percent in Favour of Phasing Out Nuclear Power among Swedes with Different Party Sympathies



Data: The SOM Institute, University of Gothenburg; Annual nationwide surveys in Sweden.

Comment: All respondents are included in the percent calculations.

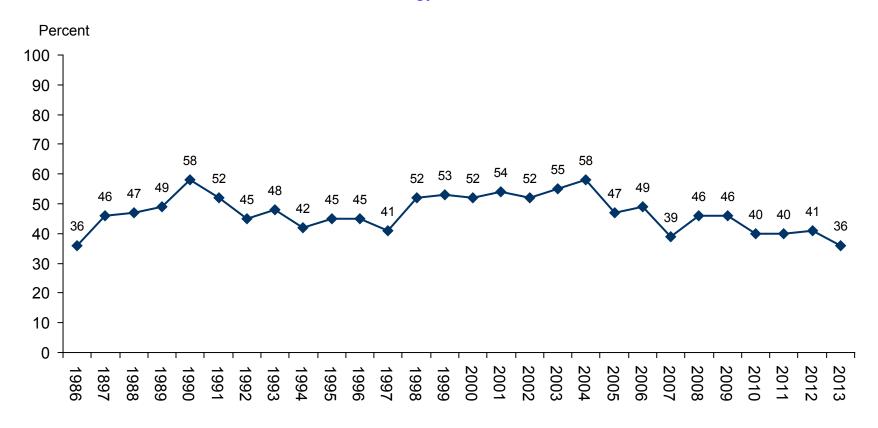
Percent Swedes Who Think Sweden - More than Today - Should Go For Different Energy Sources



 ${\it Data:}\ {\it The\ SOM\ Institute, University\ of\ Gothenburg;\ Annual\ nationwide\ surveys\ in\ Sweden.}$

Comment: See question H in Appendix. Percentages are calculated among respondents who answered the question for the different energy sources. The results for biofuel and gas 1999 were 29 and 21 percent, respectively. Due to a suspected context effect in the questionnaire the results are not presented in the figure.

Swedish Trust in Information about Energy and Nuclear Power from the Nuclear Power Industry

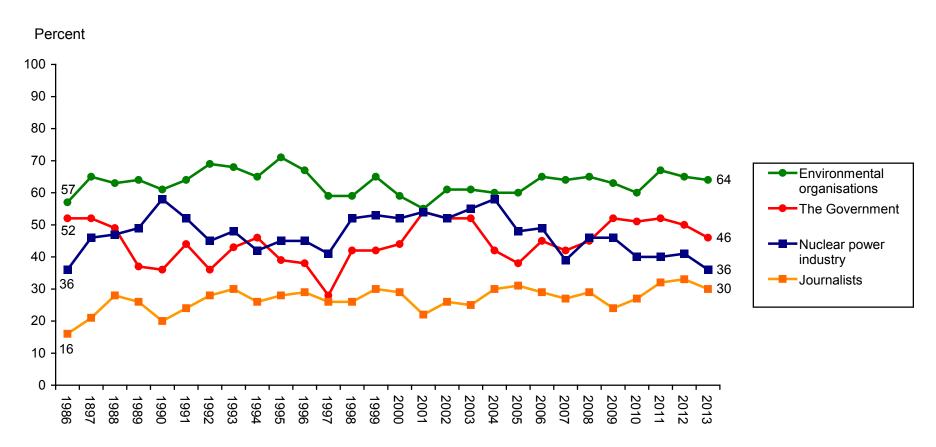


Data: The SOM Institute, University of Gothenburg; Annual nationwide surveys in Sweden.

Question: "To what extent do you trust information about energy and nuclear power provided by the following groups?" Four response alternatives: "very much; fairly much; fairly little; very little". The results show percent people answering very or fairly much when asked about the Nuclear Power Industry. The percentage base is defined as persons who answered the question.

Principal investigator: Sören Holmberg, phone +4631 7731227, e-mail: soren.holmberg@pol.gu.se. All data processed by Per Hedberg.

Swedish Trust in Information about Energy and Nuclear Power Provided by Different Groups



Data: The SOM Institute, University of Gothenburg; Annual nationwide surveys in Sweden.

Question: "To what extent do you trust information about energy and nuclear power provided by the following groups?" Four response alternatives: "very much; fairly much; fairly little; very little". The results show percentage of people answering very or fairly much. The percentage base is defined as persons who answered the different trust questions.

European Attitudes on Nuclear Power

Question: "Are you totally in favour, fairly in favour, fairly opposed or totally opposed to energy produced by nuclear power stations?"

	in fa	vour	opposed		don't	know
	2005	2008	2005	2008	2005	2008
EU 25 / EU 27	37	44	55	45	8	11
1. Lithuania	60	64	27	26	13	10
2. Czech Republic	61	64	37	32	2	4
3. Bulgaria	-	63	-	13	-	24
4. Hungary	65	63	31	32	5	5
5. Sweden	64	62	33	35	3	3
5. Finland	58	61	38	36	4	3
7. Slovakia	56	60	40	31	4	9
3. Netherlands	52	55	44	42	5	3
P. France	52	52	41	40	7	8
0. Slovenia	44	51	54	46	3	3
1. United Kingdom	44	50	41	36	16	14
12. Belgium	50	50	48	47	2	3
3. Germany	38	46	59	47	4	7
13. Germany	38	46	39	47	4	/

Comment: Special Eurobarometer 2005 and 2008: *Radioactive Waste*; Fieldwork in February – March 2005 and 2008. Countries are ranked according to percent in favour in 2008.

European Attitudes on Nuclear Power

Question: "Are you totally in favour, fairly in favour, fairly opposed or totally opposed to energy produced by nuclear power stations?"

	in favo	our	opposed		don't k	now	
	2005	2008	2005	2008	2005	2008	
EU 25 / EU 27	37	44	55	45	8	11	
14. Italy	30	43	66	46	5	11	
15. Estonia	40	41	50	53	10	6	
16. Poland	26	39	66	46	8	15	
17. Denmark	29	36	66	62	5	2	
18. Romania	-	35	-	38	-	27	
19. Latvia	39	35	49	57	12	8	
20. Luxembourg	31	35	65	59	4	7	
21. Spain	16	24	71	57	13	19	
22. Ireland	13	24	70	54	17	22	
23. Portugal	21	23	53	55	26	22	
24. Greece	9	18	86	79	5	3	
25. Malta	17	15	62	62	21	23	
26. Austria	8	14	88	83	4	3	
27. Cyprus	10	7	81	80	10	13	

Comment: Special Eurobarometer 2005 and 2008: *Radioactive Waste*; Fieldwork in February – March 2005 and 2008. Countries are ranked according to percent in favour in 2008.

European Attitudes Towards the Future of Three Energy Sources

Question: "To reduce our dependency on imported energy resources, Governments have to choose from a list of alternatives, sometimes costly solutions. Which of the following should the (NATIONALITY) Government mainly focus on for the years to come? (MAX. 2 ANSWERS)

Nuclear Ener	ду	Nuclear Ene	ergy
EU 25	12		
1. Sweden	32	16. Hungary	35
2. Finland	27	17. France	34
3. Bulgaria	24	18. Estonia	32
4. Lithuania	21	19. Latvia	30
5. Slovakia	19	20. Luxembourg	28
6. United Kingdom	18	21. Ireland	26
7. Germany	17	22. Slovenia	25
8. Czech Republic	17	23. Portugal	23
9. Romania	15	24. Croatia	22
10. Turkey	15	25. Austria	22
11. Netherlands	14	26. Denmark	18
12. Italy	13	27. Spain	16
13. Belgium	11	28. Cyprus	15
14. Poland	10	29. Malta	11
15. Turkish Cyprus	10	30. Greece	9

Comment: The figures are percentages. Source: Special Eurobarometer: Attitudes towards Energy 2006; fieldwork October-November 2005. The interview question included two more response alternatives besides nuclear, solar and wind – Promote advanced research for new energy technologies (hydrogen, clear coal, etc.) and Regulate in order to reduce our dependence of oil. In EU25 the research alternative was supported by 41 percent and the reduce oil alternative by 23 percent. The comparable results for Sweden were 55 percent and 25 percent, respectively.

European Attitudes Towards the Future of Three Energy Sources

Question: "To reduce our dependency on imported energy resources, Governments have to choose from a list of alternatives, sometimes costly solutions. Which of the following should the (NATIONALITY) Government mainly focus on for the years to come? (MAX. 2 ANSWERS)

Wind Power		Wind Pow	ver er
EU 25	31		
1. Denmark	59	16. Austria	35
2. Estonia	54	17. Portugal	34
3. Ireland	52	18. Malta	32
4. Belgium	49	19. Poland	30
5. Greece	44	20. Spain	28
6. Netherlands	42	21. Germany	26
7. Sweden	41	22. Czech Republic	25
8. Finland	41	23. Slovakia	23
9. Croatia	40	24. Cyprus	22
10. United Kingdom	39	25. Lithuania	22
11. Latvia	39	26. Romania	18
12. Slovenia	39	27. Bulgaria	16
13. France	38	28. Italy	15
14. Hungary	37	29. Turkish Cyprus	11
15. Luxembourg	36	30. Turkey	9

Comment: The figures are percentages. Source: Special Eurobarometer: Attitudes towards Energy 2006; fieldwork October-November 2005. The interview question included two more response alternatives besides nuclear, solar and wind – Promote advanced research for new energy technologies (hydrogen, clear coal, etc.) and Regulate in order to reduce our dependence of oil. In EU25 the research alternative was supported by 41 percent and the reduce oil alternative by 23 percent. The comparable results for Sweden was 55 percent and 25 percent, respectively.

European Attitudes Towards the Future of Three Energy Sources

Question: "To reduce our dependency on imported energy resources, Governments have to choose from a list of alternatives, sometimes costly solutions. Which of the following should the (NATIONALITY) Government mainly focus on for the years to come? (MAX. 2 ANSWERS)

Solar Power		Solar Pow	er
EU 25	48		
1. Cyprus	76	16. Hungary	43
2. Greece	70	17. United Kingdom	43
3. France	63	18. Italy	41
4. Luxembourg	62	19. Czech Republic	41
5. Croatia	60	20. Finland	38
6. Slovenia	60	21. Bulgaria	38
7. Malta	58	22. Portugal	37
8. Germany	55	23. Poland	37
9. Austria	54	24. Estonia	35
10. Belgium	51	25. Ireland	32
11. Turkish Cyprus	50	26. Sweden	31
12. Spain	50	27. Romania	29
13. Netherlands	47	28. Turkey	27
14. Denmark	45	29. Latvia	25
15. Slovakia	44	30. Lithuania	16

Comment: The figures are percentages. Source: Special Eurobarometer: Attitudes towards Energy 2006; fieldwork October-November 2005. The interview question included two more response alternatives besides nuclear, solar and wind – Promote advanced research for new energy technologies (hydrogen, clear coal, etc.) and Regulate in order to reduce our dependence of oil. In EU25 the research alternative was supported by 41 percent and the reduce oil alternative by 23 percent. The comparable results for Sweden were 55 percent and 25 percent, respectively.

Appendix

Swedish Opinion on Nuclear Power

Results from measurements by the SOM Institute 1986-2013

The Research Project

Energy Opinion in Sweden
Per Hedberg
Mars 2014

Swedish Opinion on Nuclear Power 1986-2013

Question A: After the 1980 Referendum, Parliament decided that nuclear power should be phased out in Sweden by 2010. What is your opinion on the use of nuclear power in Sweden?

	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
Stop nuclear power immediately	15	8	7	6	5	5	5	7	6	5	5	4
Phase out nuclear power faster than by 2010	27	18	16	12	7	10	12	12	10	8	6	6
Phase out nuclear power by 2010	28	27	21	23	17	20	24	24	24	23	20	16
Phase out nuclear power but not as fast as by 2010	17	20	24	25	29	24	25	23	23	30	31	32
Use nuclear power, do not phase out	13	17	21	25	28	26	21	21	24	23	27	30
No definite opinion		10	11	9	14	15	13	13	13	11	11	12
Sum percent Number of respondents	100 1624	100 1625	100 1594	100 1535	100 1535	100 1520	100 1858	100 1827	100 1657	100 1716	100 1681	100 1678
Percent no answer	3	3	3	3	3	3	2	2	3	3	5	4
Number of respondents with no answer	54	47	49	43	47	53	31	30	45	61	98	76

Question A: After the 1980 Referendum, Parliament decided that nuclear power should be phased out in Sweden by 2010. What is your opinion on the use of nuclear power in Sweden?

	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
Stop nuclear power immediately	15	8	6	6	5	5	5	6	6	5	5	4
Phase out nuclear power faster than by 2010	26	17	15	12	7	9	12	12	10	8	5	6
Phase out nuclear power by 2010	27	27	21	23	17	19	23	23	23	22	19	16
Phase out nuclear power but not as fast as by 2010	16	19	24	24	28	24	24	23	22	29	29	30
Use nuclear power, do not phase out	13	16	20	24	27	25	21	21	23	22	26	28
No definite opinion/ no answer	3	13	14	11	16	18	15	15	16	14	16	16
Sum percent Number of respondents	100 1624	100 1673	100 1643	100 1578	100 1582	100 1520	100 1889	100 1857	100 1702	100 1777	100 1779	100 1764

Question B: What is your opinion on the long term use of nuclear power as an energy source in Sweden?

	1996	1997	1998	1999
Phase out nuclear power by 2010	24	20	17	17
Phase out nuclear power but use the 12 reactors we have until they are worn out	32	34	42	37
Use nuclear power and renew the 12 reactors we have when they are worn out, making sure that we have 12 operational reactors in the future	19	21	21	21
Use nuclear power and go for more than 12 reactors in the future	6	7	5	7
No definite opinion	19	18	15	18
Sum percent Number of respondents	100 1682	100 1649	100 1692	100 1587
Percent no answer Number of respondents with no answer	5 97	6 105	3 48	7 116

Question B: What is your opinion on the long term use of nuclear power as an energy source in Sweden?

	1996	1997	1998	1999
Phase out nuclear power by 2010	22	19	17	16
Phase out nuclear power but use the 12 reactors we have until they are worn out	31	32	40	34
Use nuclear power and renew the 12 reactors we have when they are worn out, making sure that we have 12 operational reactors in the future	18	19	21	19
Use nuclear power and go for more than 12 reactors in the future	6	7	5	7
No definite opinion/no answer	23	23	17	24
Sum percent Number of respondents	100 1779	100 1754	100 1740	100 1703

Question C: What is your opinion on the long term use of nuclear power as an energy source in Sweden?

	2000	2001	2002	2003	2004
Phase out nuclear power by 2010	15	14	13	12	12
Phase out nuclear power but use the reactors we have until they are worn out	31	30	28	23	26
Use nuclear power and renew the reactors we have when they are worn out, but do not build additional reactors	27	31	30	32	32
Use nuclear power and go for additional reactors in the future	11	10	11	16	16
No definite opinion	16	15	18	17	14
Sum percent Number of respondents	100 1616	100 1625	100 1689	100 1746	100 1680
Percent no answer Number of respondents with no answer	5 88	7 114	5 88	4 70	5 94

Question C: What is your opinion on the long term use of nuclear power as an energy source in Sweden?

	2000	2001	2002	2003	2004
Phase out nuclear power by 2010	15	14	12	12	11
Phase out nuclear power but use the reactors we have until they are worn out	29	28	27	22	25
Use nuclear power and renew the reactors we have when they are worn out, but do not build additional reactors	26	29	28	31	30
Use nuclear power and go for additional reactors in the future	10	9	11	15	15
No definite opinion/no answer	20	20	22	20	19
Sum percent Number of respondents	100 1704	100 1739	100 1777	100 1818	100 1774

Question D: What is your opinion on the long term use of nuclear power as an energy source in Sweden?

	2005	2006	2007	2008	2009	2010	2011
Phase out nuclear power very soon	10	10	9	9	9	9	11
Phase out nuclear power but use the reactors we have until they are worn out	25	24	24	23	23	23	26
Use nuclear power and renew the reactors we have when they are worn out, but do not build additional reactors	35	34	32	31	33	33	33
Use nuclear power and go for additional reactors in the future	17	17	19	21	19	21	15
No definite opinion	13	15	16	16	16	14	15
Sum percent Number of respondents	100 1655	100 1591	100 3290	100 3180	100 4824	100 1584	100 1479
Percent no answer Number of respondents with no answer	4 69	2 38	4 145	2 79	2 102	4 68	3 52

Question D: What is your opinion on the long term use of nuclear power as an energy source in Sweden?

	2005	2006	2007	2008	2009	2010	2011
Phase out nuclear power very soon	9	10	8	9	9	8	10
Phase out nuclear power but use the reactors we have until they are worn out	24	23	23	22	22	22	26
Use nuclear power and renew the reactors we have when they are worn out, but do not build additional reactors	33	33	31	30	32	32	32
Use nuclear power and go for additional reactors in the future	17	17	18	21	19	20	14
No definite opinion/no answer	17	17	20	18	18	18	18
Sum percent Number of respodents	100 1724	100 1629	100 3435	100 3259	100 4926	100 1652	100 1531

Question E: What is your opinion on the long term use of nuclear power as an energy source in Sweden?

	2010	2011	2012	2013
Phase out nuclear power very soon	8	11	12	12
Phase out nuclear power, but make use of the 10 reactors we have until they are worn out	32	35	39	41
Use nuclear power and replace the present reactors with a maximum of 10 new reactors	28	25	26	24
Use nuclear power and build more reactors than the present 10 in the future	17	12	11	10
No opinion	15	17	12	13
Sum percent Number of respondents	100 1608	100 1528	100 1464	100 1572
Percent no answer Number of respondents with no answer	3 45	4 69	4 60	4 72

Question E: What is your opinion on the long term use of nuclear power as an energy source in Sweden?

	2010	2011	2012	2013
Phase out nuclear power very soon	8	10	11	11
Phase out nuclear power, but make use of the 10 reactors we have until they are worn out	31	34	37	39
Use nuclear power and replace the present reactors with a maximum of 10 new reactors	27	24	25	23
Use nuclear power and build more reactors than the present 10 in the future	17	11	11	10
No opinion/no answer	17	21	16	17
Sum percent Number of respondents	100 1653	100 1597	100 1524	100 1644

Question F: Keep nuclear power, even after 2010

	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
Very good proposal	11	17	23	27	34	24	20	19	20	24	26	
Fairly good proposal	12	16	17	19	21	23	23	20	21	22	23	
Neither good or bad	17	20	22	18	20	22	22	22	22	19	21	
Fairly bad proposal	18	17	15	13	11	13	14	16	16	14	13	
Very bad proposal	42	30	23	23	14	18	21	23	21	21	17	
Sum percent Number of respondents	100 1562	100 1612	100 1567	100 1515	100 1512	100 1498	100 1821	100 1784	100 1641	100 1715	100 1687	
Percent no answer	4	4	5	4	4	5	4	4	4	3	5	
Number of respondents with no answer	62	60	76	63	70	75	68	73	61	62	92	

Question F: Keep nuclear power, even after 2010

	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
Very good proposal	11	16	22	26	33	22	19	18	19	23	25	
Fairly good proposal	12	15	16	18	21	22	22	20	21	21	22	
Neither good or bad	16	19	21	18	19	21	21	21	21	19	20	
Fairly bad proposal	17	17	14	12	10	13	14	15	15	13	12	
Very bad proposal	40	29	22	22	13	17	20	22	20	20	16	
No answer	4	4	5	4	4	5	4	4	4	4	5	
Sum percent Number of respondents	100 1624	100 1672	100 1643	100 1578	100 1582	100 1573	100 1889	100 1857	100 1702	100 1777	100 1779	

Question G: Long term, Sweden should phase out nuclear power

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Very good proposal	23	22	23	20	18	15	15	14	16	18	17	20	20	21	19	23
Fairly good proposal	26	24	23	22	24	20	20	21	23	23	24	19	19	22	25	23
Neither good or bad	21	23	22	25	25	24	24	21	25	26	21	26	28	29	29	26
Fairly bad proposal	17	17	19	18	18	21	21	23	19	18	23	19	17	17	16	16
Very bad proposal	13	14	13	15	15	20	20	21	17	16	15	16	16	11	11	12
Sum percent Number of respondents	100 3446	100 3341	100 1748	100 3428	100 3396	100 3487	100 3398	100 1610	100 1541	100 1576	100 1540	100 1515	100 1587	100 1463	100 1459	100 3239
Percent no answer Number of respondents	3	4	5	6	6	5	6	7	5	5	4	4	4	4	4	3
with no answer	115	70	94	210	210	188	214	114	88	90	58	67	65	68	65	111

Question G: Long term, Sweden should phase out nuclear power

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Very good proposal	22	21	22	19	17	14	14	13	15	17	16	19	20	20	18	23
Fairly good proposal	25	23	22	21	23	19	19	20	22	22	24	18	18	21	24	22
Neither good or bad	21	22	21	23	23	23	23	20	23	24	20	25	27	28	28	25
Fairly bad proposal	16	16	18	17	17	20	20	21	18	17	22	18	16	16	15	16
Very bad proposal	13	13	12	14	14	19	18	19	16	15	15	16	15	10	11	11
No answer	3	5	5	6	6	5	6	7	5	5	4	4	4	5	4	3
Sum percent Number of respondents	100 3561	100 3503	100 1842	100 3638	100 3606	100 3675	100 3612	100 1724	100 1629	100 1666	100 1598	100 1582	100 1652	100 1531	100 1524	100 3350

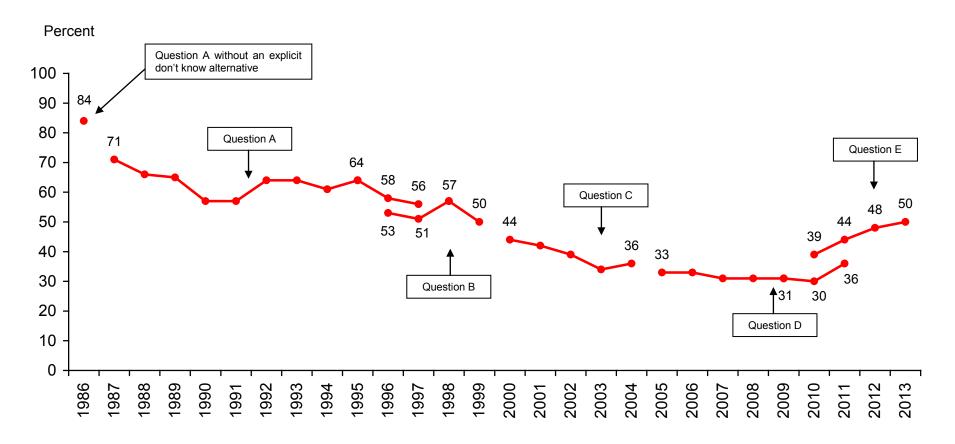
Question H: During the upcoming 5-10 years, how much should we go for (nuclear power)?

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
More than to-day	9	11	11	12	16	14	18	18	17	19	16	19	12	14	13
About as to-day	34	34	36	37	38	36	36	35	33	31	34	32	30	31	29
Less than to-day	26	30	29	29	24	27	24	25	28	26	26	27	29	30	29
Completely give up (nuclear power) No opinion	20 11	19 6	18 6	16 6	15 7	16 7	15 7	15 7	15 7	16 8	16 8	14 8	21 8	18 7	20 9
<u>'</u>					100	100	100	100	100					•	
Sum percent Number of respondents	100 1592	100 1573	100 1611	100 1624	100 1713	100 1634	100 1633	100 1544	100 1559	100 1517	100 1524	100 1568	100 1431	100 1437	100 1540
Percent no answer Number of respondents	7	8	6	9	6	8	5	5	6	5	4	5	7	6	6
with no answer	111	131	101	153	103	140	91	85	107	81	58	84	100	87	104

Question H: During the upcoming 5-10 years, how much should we go for (nuclear power)?

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
More than to-day	9	10	10	11	15	13	17	17	16	18	15	18	12	13	12
About as to-day	31	31	33	34	36	33	34	33	31	29	33	30	28	29	27
Less than to-day	25	28	27	26	23	25	23	24	26	25	25	25	27	29	27
Completely give up (nuclear power)	19	18	17	15	14	15	14	14	14	15	15	14	19	17	19
No opinion/no answer	16	13	13	14	12	14	12	12	13	13	12	13	14	12	15
Sum percent Number of respondents	100 1703	100 1704	100 1739	100 1777	100 1816	100 1774	100 1774	100 1629	100 1666	100 1598	100 1582	100 1652	100 1531	100 1524	100 1644

Percent Swedes in Favour of Phasing Out Nuclear Power



Data: The SOM Institute, University of Gothenburg; Annual nationwide surveys in Sweden.

Comment: All respondents are included in the percent calculations. For question wording see the Appendix. Changes in question wording have been done in 1987 (to question A; in 1986 the question did not have an explicit don't know alternative) in 1996-98 from question A to B, in 2000 from question B to C, in 2005 from question C to D and in 2010-11 from question D to E. See Appendix.