

Acceptability of Climate Change Policies What Do People Think?

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Public acceptability and support: why?

Motivation:

- resistance and reluctance among politicians to implement policies lacking public support are factors that can inhibit the successful implementation of climate policies (e.g. Steg et al. 2006), such as failure to introduce the carbon-energy taxation (in France in 2010, etc.)

Aim:

- detailed understanding of acceptability of climate change policies to preclude public resistance

CECILIA2050's objectives and approach

Objective – to analyse **factors influencing public acceptance:**

- characteristics of policies and instruments - economics
- structural and individual factors (such as socio-demographic and socio-psychological variables) - sociology, social psychology

Approach

- Systematic review of studies
- Own empirical studies

Our empirical study in CECILIA2050

Surveys conducted on representative samples of the general population in three EU countries: the **Czech Republic, Poland, and the UK**

Dataset analysed in this presentation:

- representative sample of Czech adult population (18-69)
- quota sampling, CAWI (Czech National Panel)
 - I. Survey in October 2014, N=727
 - II. Survey in September/October 2015, N=1371

Climate policies tend to be acceptable by people who ...

- are aware of the climate changes
- feel more responsible for the associated environmental problems,
- feel a stronger moral obligation to contribute to the solution
- perceive the policies to be fair
 - distribution of costs / environmental benefits
 - preference for polluter-pays principle
- perceive the policies to be effective in reducing impacts
 - temperature increase,
 - % reduction of GHG emissions

I. Insights from the literature review: other factors influencing acceptance

- Environmental **concern**, concern about climate change and energy security
- perception of **effects of policies** on lives of people (threaten people's freedom of choice)
- **spatial distribution** of CO2 reductions
- mixed evidence on social-demographic factors
income (positive), age (negative), education (positive)

I. Insights from the literature review: tax-aversion

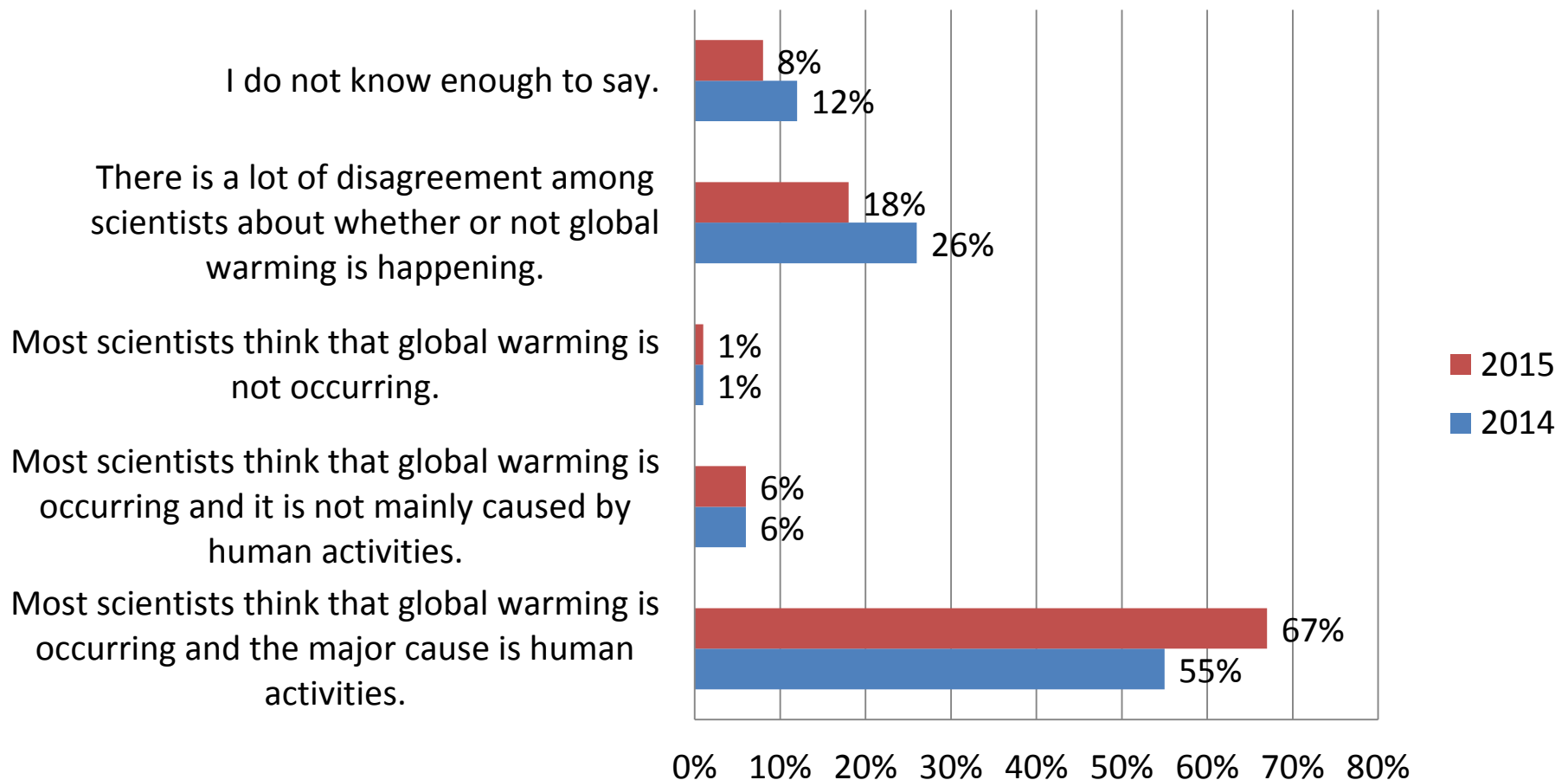
Support for Pigouvian taxes may be raised by:

- **taking into account distributional consequences**, especially protecting from regressive effects
- **strengthening trust in government and public organizations** (transparency, public participation, etc.; see literature on public governance and public trust)
- **support acquiring information** about how the taxes work, how they can reduce the externalities and increase welfare and about their effectiveness;
- **earmarking the revenues** for environmental measures and revenues are targeted to narrowly specified groups
- public investments in:
 - environmentally friendly technologies,
 - transport infrastructure, and renewable energy



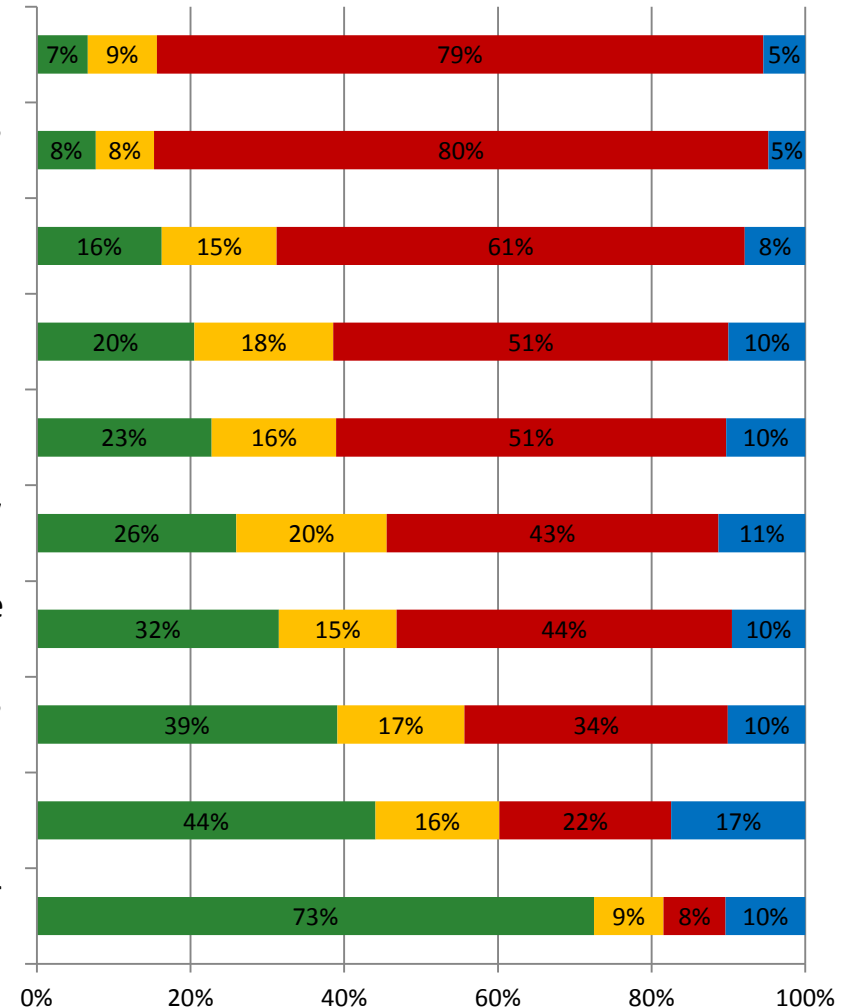
II. Results of the survey in CZ

Perception of disagreement among scientists about whether or not global warming is happening



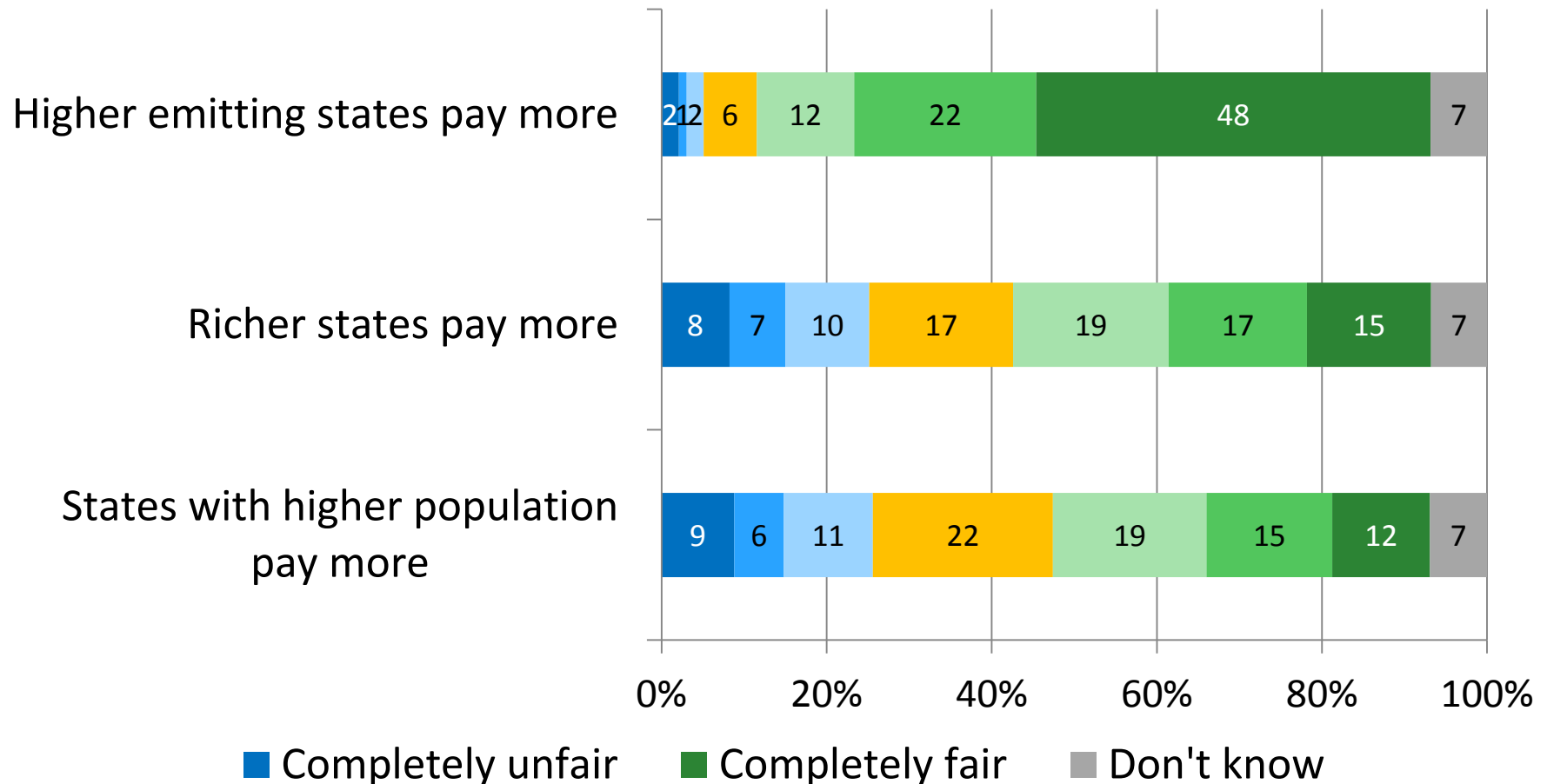
II. Perception of climate change impacts (%)

- ... cause extreme weather and more natural disasters (e.g. floods or extreme drought) in the CR.
- ... be a serious problem for species of plants and animals and their natural habitats .
- ... will be in general a serious problem for the CR as a whole.
- ... negatively affect health and living standards of people in my local region.
- ... have negative impacts on my own health and well-being.
- ... will be in general a serious problem for me and my family.
- ... cause winter temperatures to rise and thus save me money on my heating bills.
- ... positively affect food production in the CR (new varieties of plants can be grown, longer growing season).
- ... create new business opportunities.
- ... save billions in health care costs in the CR due to fewer winter related diseases and fewer deaths during the...



■ Unlikely ■ Neither ■ Likely ■ Don't know

II. What is considered as fair? Distribution of costs among EU countries

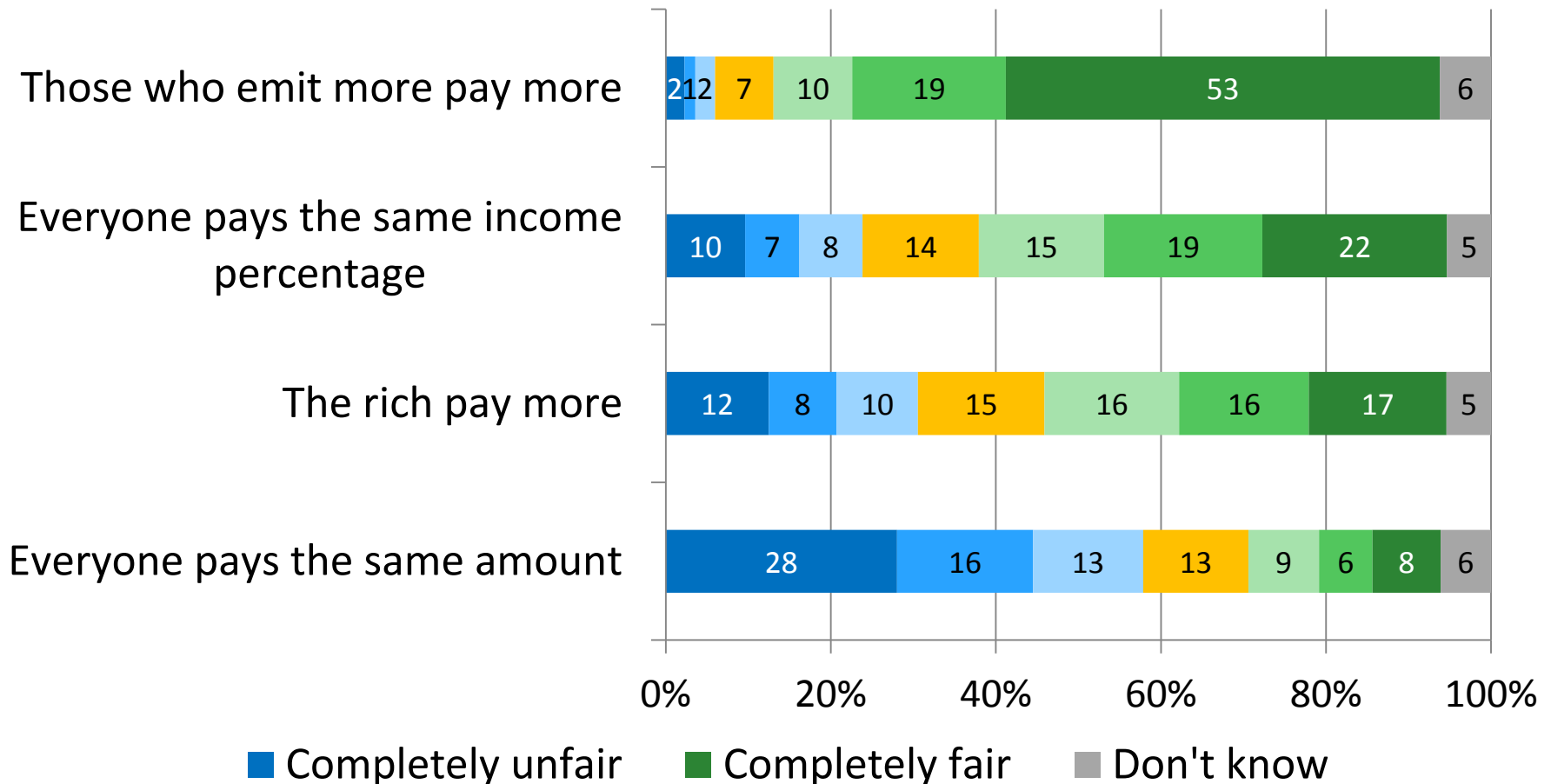


Q: How fair do you find each of these rules for distributing the costs of emissions reductions among the countries of the European Union?

Source: own survey 2015; quota sampling; CAWI

N=1371

II. What is considered as fair? Distribution of costs among Czechs



Q: How fair do you consider these rules for distributing the costs of emissions reduction among the citizens of the Czech Republic?

Source: own survey 2015; quota sampling; CAWI

N=1371

III. Results of the survey in CZ: discrete choice experiments

Acceptability of climate mitigation policies

- Three experiments on acceptability of policies
 - to reach **the GHG emission target by 2020, 2030, and 2050**
 - to reach the 2050 emission target when **policies differ in their instruments**
 - to support **renewable energy & energy efficiency** (with Alberini and Bigano – not presented here)
- Acceptability is analysed by means of **the discrete choice experiments**
 - Respondents are asked to choose a policy **they prefer the best**
 - One of the presented policies present **a status quo**, i.e. the current policy that costs additionally nothing, but will not bring any further emission reductions
 - Policies are described by their **attributes** (approach, cost distribution, burden sharing, use of revenues)
 - One of the policy attributes is **cost** (an increase in one's cost or expenditures)

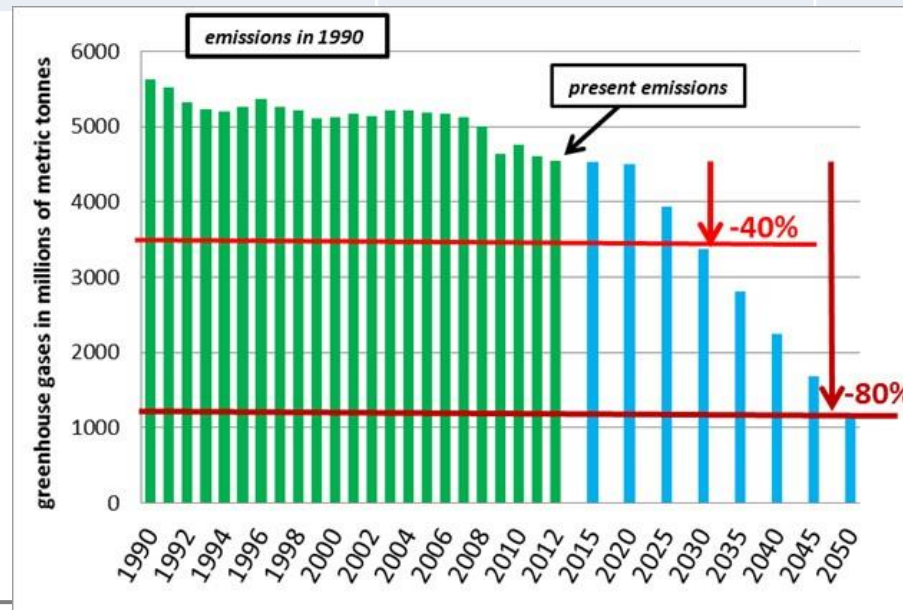
1. discrete choice experiment (DCE1)

Key features of valued policies

- Policies that may be introduced by the EU in order to mitigate climate change impacts differ
 - **GHG emission reduction targets** at the EU
 - **Burden sharing** across the EU Member States
 - **Cost distribution** among the Czechs
 - Increased monthly costs for your household

Information about the EU emission reduction targets

	20% reduction by 2020	40% reduction by 2030	80% reduction by 2050
GHG volume	emissions remain more-less as now, may slightly increase (black dotted line)	-20% by 2020 -40% by 2030 then, remain stable (light red line)	-20% by 2020 -40% by 2030 -80% by 2050 (dark red line)
Policy status	policy that has been agreed at the EU and is currently being implemented	EU commitment, measures not implemented yet	EU commitment, measures not implemented yet



	20% reduction by 2020	40% reduction by 2030	80% reduction by 2050
<p>Increase in global average temp. by 2100 (rel. to 1986-2005) - if the rest of the world adopts equivalent targets</p>	2.6 °C to 4.8 °C	1.2 °C to 2.8 °C	0.7 °C to 2.2 °C
<p>Likely impacts</p>	<p>Severe</p> <ul style="list-style-type: none"> • large drop in agricultural production • loss of most coastal areas • substantial threat to human health caused by disease, malnutrition, heat waves, floods and droughts • widespread extinction of animal and plant species, loss of their habitats 	<p>Moderate</p> <ul style="list-style-type: none"> • moderate drop in agricultural production • loss of many coastal areas • some threat to human health caused by disease, malnutrition, heat waves, floods and droughts • extinction of some animal and plant species and loss of their habitats (especially coral reefs, arctic animals) 	<p>Mild</p> <ul style="list-style-type: none"> • the most severe impacts of climate change are prevented • some effects of global warming will be felt, however not as severe as in the other reduction scenarios

	Policy A	Policy B	Current policy
EU emission reduction target	40% reduction by 2030	80% reduction by 2050	20% reduction by 2020
Increase in global average temperature by 2100 if the rest of the world complies equivalently	1.2 °C to 2.8 °C	0.7 °C to 2.2 °C	2.6 °C to 4.8 °C
Likely impacts	Moderate	Mild	Severe
Distribution of costs among the EU countries	states with higher population pay more	higher emitting states pay more	richer states pay more
Distribution of costs among the Czech citizens	every citizen pays the same amount	everyone pays the same income percentage	everyone pays the same income percentage
Increased monthly costs for your household	25 €	75 €	0 €

Which policy do you consider the best taking into account you and your household?

Estimation strategy

- Models estimated in **preference space** (coefficients of indirect utility function) as well as **WTP space** (implicit WTP values got inferred directly)
- base model - **MNL multinomial logit**
 - only observed preference heterogeneity to analyse possible (not presented here)
- Mixed logit (Random Parameter Logit) - MXL
 - Controlling for unobserved preference heterogeneity
 - MXL_d = MXL without correlated (random) parameters → mean and s.d. of mean estimated
 - MXL = MXL with correlated (random) parameters → mean, s.d. mean, and full covariance matrix estimated

Estimation results – DCE1

MNL, WTP space (in 1000 Kč)

	coef.	st.err.	p-value
SQ (=20% target)	0.4144	0.0836	0.0000
target = 40%	0.6861	0.0631	0.0000
target = 80%	0.8503	0.0649	0.0000
burden sharing EU = per capita	0.0683	0.0609	0.2621
burden sharing EU= emissions	0.4986	0.0609	0.0000
burden sharing EU= wealth (<i>reference</i>)			
cost distrib = lump sum	-0.3145	0.0612	0.0000
cost distrib = progressive	0.0224	0.0679	0.7419
cost distrib = emission	0.6990	0.0670	0.0000
cost distrib = linear (<i>reference</i>)			
-cost (1000 CZK)	0.6120	0.0228	0.0000

LLO -10561
 LL -10092
 n 9912
 n ID 1652

Estimation results – DCE1

MXL_d (no correlation), WTP space (in 1000 Kč)

var.	Means			Standard Deviations		
	coef.	st.err.	p-value	coef.	st.err.	p-value
SQ	-0.1027	0.1039	0.3231	2.8620	0.1330	0.0000
target = 40%	0.6183	0.0445	0.0000	0.2163	0.1686	0.1995
target = 80%	0.7190	0.0529	0.0000	0.7429	0.0685	0.0000
burden sharing = per capita	0.0210	0.0457	0.6449	0.4106	0.1428	0.0040
burden sharing = emission	0.4369	0.0458	0.0000	0.4777	0.0935	0.0000
cost distrib = lump sum	-0.3011	0.0564	0.0000	0.2272	0.2389	0.3416
cost distrib = progressive	-0.0407	0.0579	0.4819	0.8438	0.0889	0.0000
cost distrib = emission	0.5553	0.0589	0.0000	0.9254	0.0782	0.0000
-cost (1000 CZK)	0.1680	0.0512	0.0010	0.7664	0.0824	0.0000
Model characteristics						
LL0	-10561					
LL	-8256					
McFadden R2	0.2183					
Ben-Akiva R2	0.4634					
AIC/n	1.6695					
n	9912					
k	18					

Note: Reference categories: burden sharing EU= wealth & cost distrib = linear

Estimation results – DCE1

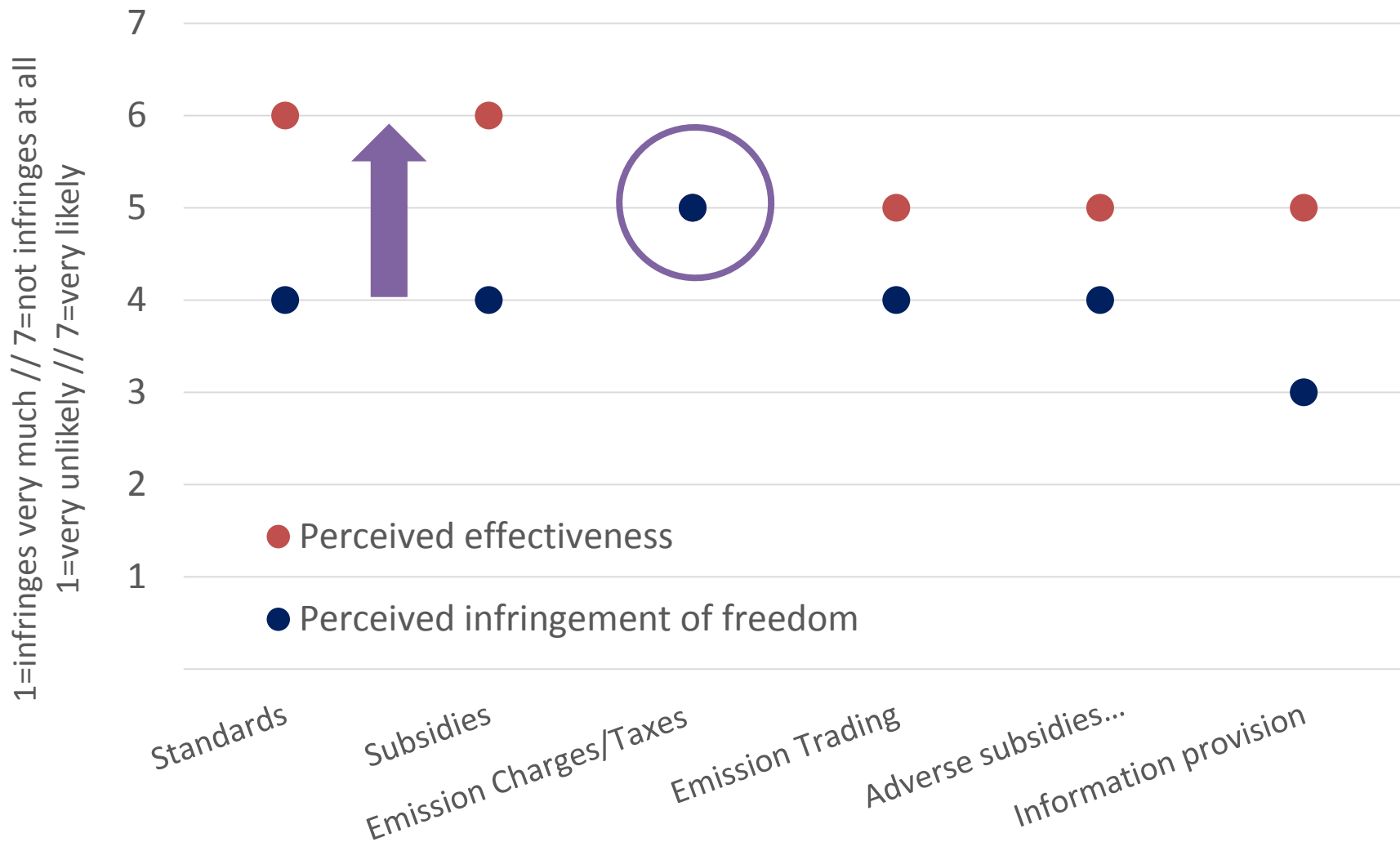
MXL (w correlations), WTP space (in 1000 Kč)

var.	Means			Standard Deviations		
	coef.	st.err.	p-value	coef.	st.err.	p-value
SQ	-0.3530	0.0777	0.0000	2.0844	0.0948	0.0000
target = 40%	0.4591	0.0660	0.0000	0.9346	0.0492	0.0000
target = 80%	0.5185	0.0713	0.0000	1.2203	0.0650	0.0000
burden sharing = per capita	0.1283	0.0579	0.0267	0.5689	0.0548	0.0000
burden sharing = emission	0.4124	0.0603	0.0000	0.7633	0.0542	0.0000
cost distrib = lump sum	-0.2648	0.0619	0.0000	0.4009	0.0613	0.0000
cost distrib = progressive	0.1263	0.0740	0.0878	0.7968	0.0709	0.0000
cost distrib = emission	0.5911	0.0799	0.0000	1.1707	0.1074	0.0000
-cost (1000 CZK)	0.4500	0.0633	0.0000	1.2721	0.1203	0.0000
Model characteristics						
LL0	-10561					
LL	-8077					
McFadden R2	0.2353					
Ben-Akiva R2	0.4724					
AIC/n	1.6407					
n	9912					
k	54					

Note: Reference categories: burden sharing EU= wealth & cost distrib = linear

2. discrete choice experiment (DCE2)

Perceived effectiveness and infringement of freedom (medians)



Source: own survey; quota sampling; CAWI

N=1371

Attribute	Level
Approach of the policy	<ul style="list-style-type: none"> • Technology & energy performance standards • Subsidies for energy savings • [Charges for/Taxes on] energy and emissions • Emissions trading system • Removal of environmentally harmful subsidies • Information provision
Revenue recycling in the Czech Republic	<p>NO or YES – if YES:</p> <ul style="list-style-type: none"> • Support for energy savings, environmental programs and clean technologies • Improvement of public services (health, education) • Public debt reduction • Social problems mitigation • Research & technology development • Increase spending according to current allocation • Reduce taxes on labour and goods
Increase in your monthly costs until 2050	<ul style="list-style-type: none"> • 0€ --- [<i>in SQ only</i>] • 20€, 33€, 65€, 95€, 130€, 150€

Status quo = current measures (emission targets will not be fulfilled after 2020) but cost nothing; revenue recycling and cost distribution not further specified

	Policy A	Policy B	Current policy
Emissions reduction target for the European Union	80% reduction by 2050	80% reduction by 2050	20% reduction by 2020
Policy measure	Taxes on energy and emissions + Removal of environmentally harmful subsidies	Taxes on energy and emissions + Subsidies for energy savings	No additional
Generation of new revenues for state budget	yes	yes	No
Use of additional revenues in the Czech Republic	environmental programs	public services (health, education)	
Increased monthly costs for your household	25 €	75 €	0 €

Which policy do you consider the best taking into account you and your household?

Estimation results – DCE2 MXL, WTP space (in 1000 Kč)

var.	Means			Standard Deviations		
	coef.	st.err.	p-value	coef.	st.err.	p-value
SQ	-0.523	0.044	0.000	1.984	0.083	0.000
tax	-0.006	0.029	0.838	0.157	0.025	0.000
permit	-0.077	0.029	0.008	0.229	0.022	0.000
rem subs	0.119	0.024	0.000	0.282	0.023	0.000
bans & stand	0.027	0.026	0.307	0.000	0.000	1.000
info	-0.031	0.025	0.209	0.152	0.019	0.000
subs	0.082	0.026	0.001	0.025	0.018	0.176
revrec = 6 (current taxes)	0.079	0.040	0.047	0.519	0.041	0.000
revrec = 5 (pub debt)	0.163	0.033	0.000	0.474	0.035	0.000
revrec = 3 (social problems)	0.195	0.030	0.000	0.099	0.038	0.010
revrec = 4 (R&D support)	0.264	0.030	0.000	0.326	0.025	0.000
revrec = 2 (pub serv)	0.274	0.029	0.000	0.182	0.028	0.000
revrec = 7 (tax cuts)	0.291	0.032	0.000	0.093	0.022	0.000
revrec = 1 (enviro)	0.330	0.031	0.000	0.160	0.030	0.000
-cost1	1.364	0.075	0.000	1.214	0.097	0.000
Model characteristics						
LLO		-10655.1				
LL		-7396.6				
McFadden R2		0.3058				
Ben-Akiva R2		0.5087				
AIC/n		1.4985				
n		9912				
k		30				

Estimation results – DCE2 MXL, preference space

	Means			Standard Deviations			implicit WTP
	coef.	st.err.	p-value	coef.	st.err.	p-value	
SQ	-2.0221	0.2411	0.0000	5.6237	0.2651	0.0000	-849 Kč
instr = 2 (permit)	-0.3443	0.1663	0.0384	1.1746	0.4264	0.0059	- 145 Kč
instr = 3 (tax + permit)	-0.0757	0.1534	0.6215	0.0421	0.6049	0.9445	-32 Kč
instr = 4 (tax + rem subs)	0.5146	0.1454	0.0004	0.1324	0.4165	0.7506	216 Kč
instr = 5 (tax + bans & stand)	0.0187	0.1576	0.9055	0.0000	0.0002	1.0000	8 Kč
instr = 6 (tax + info)	-0.0720	0.1614	0.6557	0.8978	0.4598	0.0509	-30 Kč
instr = 7 (perm it+ rem subs)	0.0487	0.1447	0.7364	0.2077	0.4925	0.6732	20 Kč
instr = 8 (perm it+ bans & stand)	-0.1198	0.1450	0.4087	0.0000	0.0032	0.9997	- 50 Kč
instr = 9 (permit + info)	-0.3142	0.1476	0.0333	0.2633	0.3801	0.4886	-132 Kč
instr = 10 (rem subs + bans & stand)	0.4807	0.1480	0.0012	0.6152	0.4109	0.1344	202 Kč
instr = 11 (tax + subs)	0.3529	0.1399	0.0116	0.0000	0.0001	1.0000	148 Kč
instr = 12 (permit + subs)	-0.1023	0.1501	0.4955	0.8725	0.3482	0.0122	- 43 Kč
instr = 13 (rem subs + subs)	0.5731	0.1442	0.0001	0.4240	0.5718	0.4584	241 Kč
instr = 14 (rem subs + info)	0.2192	0.1491	0.1414	0.9864	0.2875	0.0006	92 Kč
instr = 15 (subs)	0.3100	0.2515	0.2177	0.6708	1.0833	0.5357	130 Kč
instr = 16 (bans & stand)	0.0395	0.2280	0.8626	0.0000	0.0008	0.9999	17 Kč
instr = 17 (bans & stand + info)	-0.0662	0.2602	0.7991	0.7024	0.8661	0.4174	-28 Kč
revrec = 6 (current)	0.2003	0.1508	0.1842	0.6873	0.2815	0.0146	84 Kč
revrec = 5 (pub debt)	0.4881	0.1490	0.0011	1.2848	0.2096	0.0000	205 Kč
revrec = 3 (social problems)	0.7070	0.1434	0.0000	0.0000	0.0008	0.9999	297 Kč
revrec = 4 (R&D support)	0.8561	0.1369	0.0000	0.5492	0.2091	0.0086	359 Kč
revrec = 7 (tax cuts)	0.9641	0.1409	0.0000	0.5894	0.2739	0.0314	405 Kč
revrec = 2 (pub serv)	0.9808	0.1431	0.0000	0.6730	0.2366	0.0044	412 Kč
revrec = 1 (enviro)	1.1632	0.1475	0.0000	0.5314	0.2487	0.0326	488 Kč
-cost (1000 CZK)	2.3827	0.1184	0.0000	2.0545	0.1105	0.0000	

Conclusions

- Czechs **prefer the strictest reduction target** (80% reduction by 2050) and are willing to pay for it on average about 500 CZK per month
- Burden sharing based on **an excess of GHG emissions** is accepted the most, **per capita based sharing** is the least option.
- Cost distribution should be linked to attributable **emissions**, the lump-sum (per capita) cost payment is least accepted.
- Revenue recycling option — Czechs prefer using the additional revenues for **environmental programs, to reduce taxes on labour and taxes on goods, and for public services** (health, education), while they support **increase spending according to current allocation** the least; support of **R&D support** stands somewhere in the middle out of the five RR options.

Conclusions

- **Combination of Policy Instruments** matters.
- Czechs are willing pay more for:
 - Taxes on energy and emissions + Removal of environmentally harmful subsidies
 - Taxes on energy and emissions + Subsidies for energy savings
 - Removal of environmentally harmful subsidies + Subsidies for energy savings
- Czechs don't prefer emissions trading system.
- In line with others (Kallbekken et al. 2011; Shogren 2012), Czechs just did not like the “*t-word*”—tax, and; second, re-framing the tax as a “charge” increased support.
- 47% of Czech respondents think that it is rather likely that such a policy will be implemented...

Thank you for your attention

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