

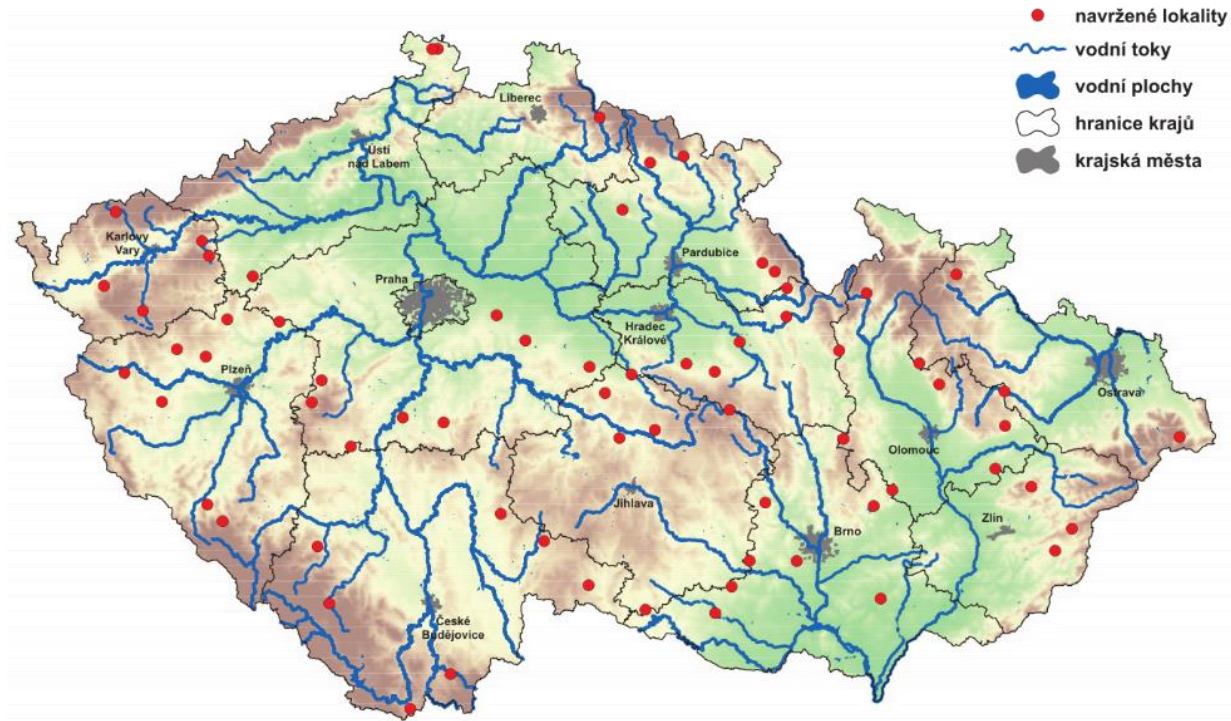


What type of water reservoirs do Czech citizens want and how much are they willing to pay for them?

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context & goal



context

- last 20 years: 6 major flooding and 3 major drought episodes
- **Natural Water Accumulation Sites Master Plan** (Ministry of Agriculture 2011) promulgated 65 sites for potential building of large dams
- these may be build if needed for water retention or flood protection in ca. 100 years horizon

goal

- elicit acceptability and willingness to bear the costs of building these dams

survey design

2 variants of discrete choice experiment (DCE) on Master Plan implementation:

- 4 common attributes:
 - no. of dams (20-30-45-65-100-120),
 - dams for water retention (0-30-70-100% share),
 - dams for flood protection (100%-retention share),
 - monthly increase of household water bill (CZK 100-250-400-600-800)
- 2 additional attributes in DCE variant 1:
 - availability of recreational use of dams (0-30-70-100%),
 - hydropower generation (0-30-70-100%)
- 6 choices (*in variant 1*) or 4 choices (*in variant 2*) per respondent



choice card (DCE variant 1)

počet nových přehrad	
z toho přehrad <i>pro zásobování vodou</i>	
z toho přehrad na ochranu před povodněmi	
možnost rekreačního využití (koupání)	
využití pro výrobu elektřiny	
zvýšení nákladů Vaší domácnosti	

Kterou možnost považujete za nejlepší?

plán nových přehrad
45
70 %
30 %
0 %
70 %
250 Kč/měsíc (3 000 Kč ročně)

plán nových přehrad

současný stav
žádná nová
-
-
-
-
0 Kč

současný stav

status quo voters

Most important reason for choosing status quo in all choices	variant 1	variant 2
1. Master Plan too expensive / My expenses already too high	3.5%	3.8%
2. I doubt that: floods or droughts will cause more damage in future / my household is affected by floods or droughts / dams can protect us against damage	1.3%	2.8%
3. I don't believe in the Master Plan or its implementation	1.5%	2.8%
4. I doubt that funds collected will not be used for building of dams	3.4%	4.1%
5. Proposed number of dams is too high / too low	2.0%	1.7%
6. I don't believe in the information provided	0.5%	0.4%
7. Other	1.0%	0.9%

answers sub 3. & 4. & 6. & 7. qualify as protesters

data & methods

data collection

- sample sizes: 1594 (*variant 1*) and 968 (*variant 2*) respondents (from internet panel w/ quotas)
- data cleaning – „speeders“ and „protesters“ excluded (~12% of sample)

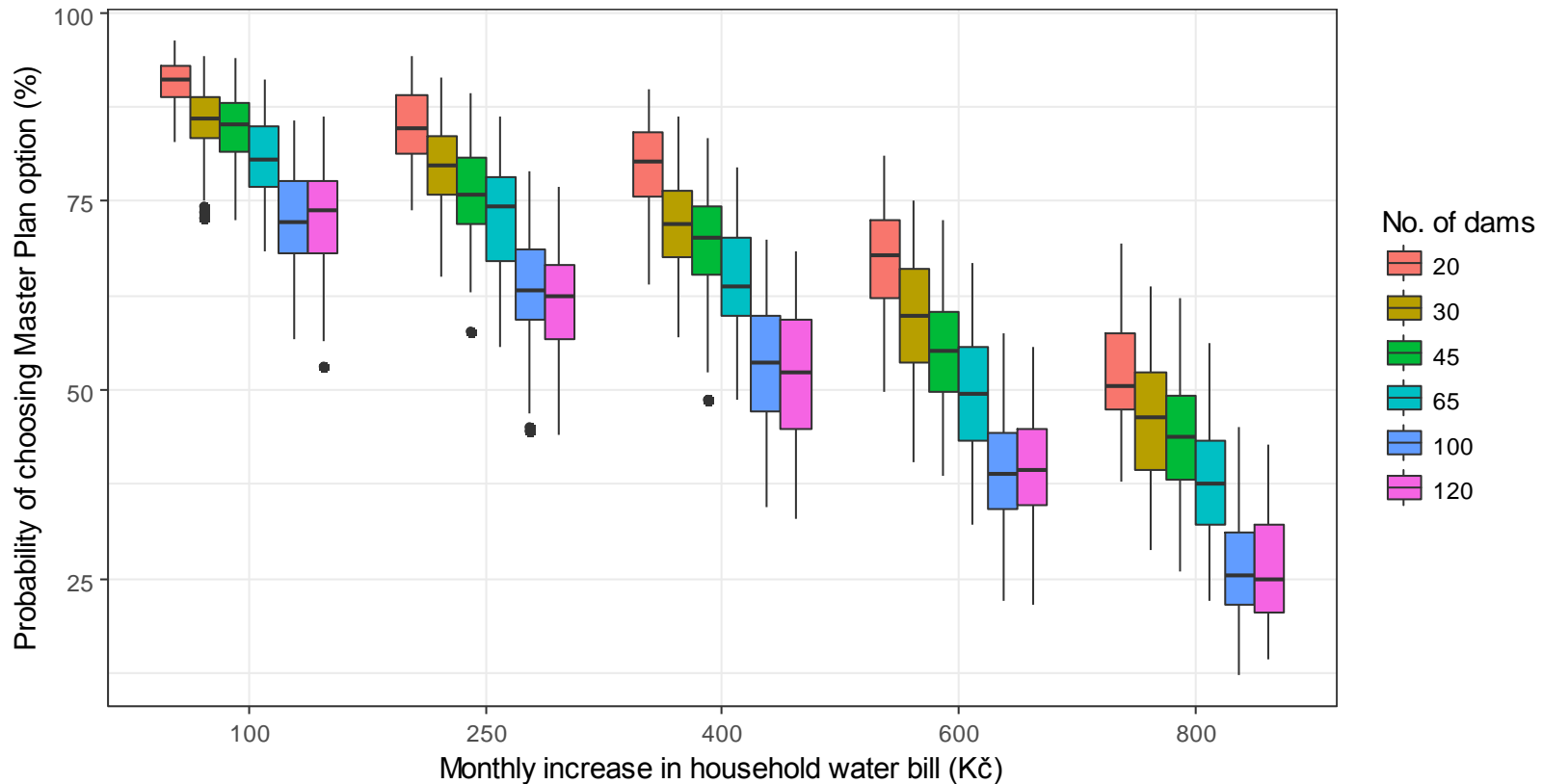
data analysis

- DCE data modelled with discrete choice model (panel probit with random effects)
- respondent's socio-economic as additional explanatory variables

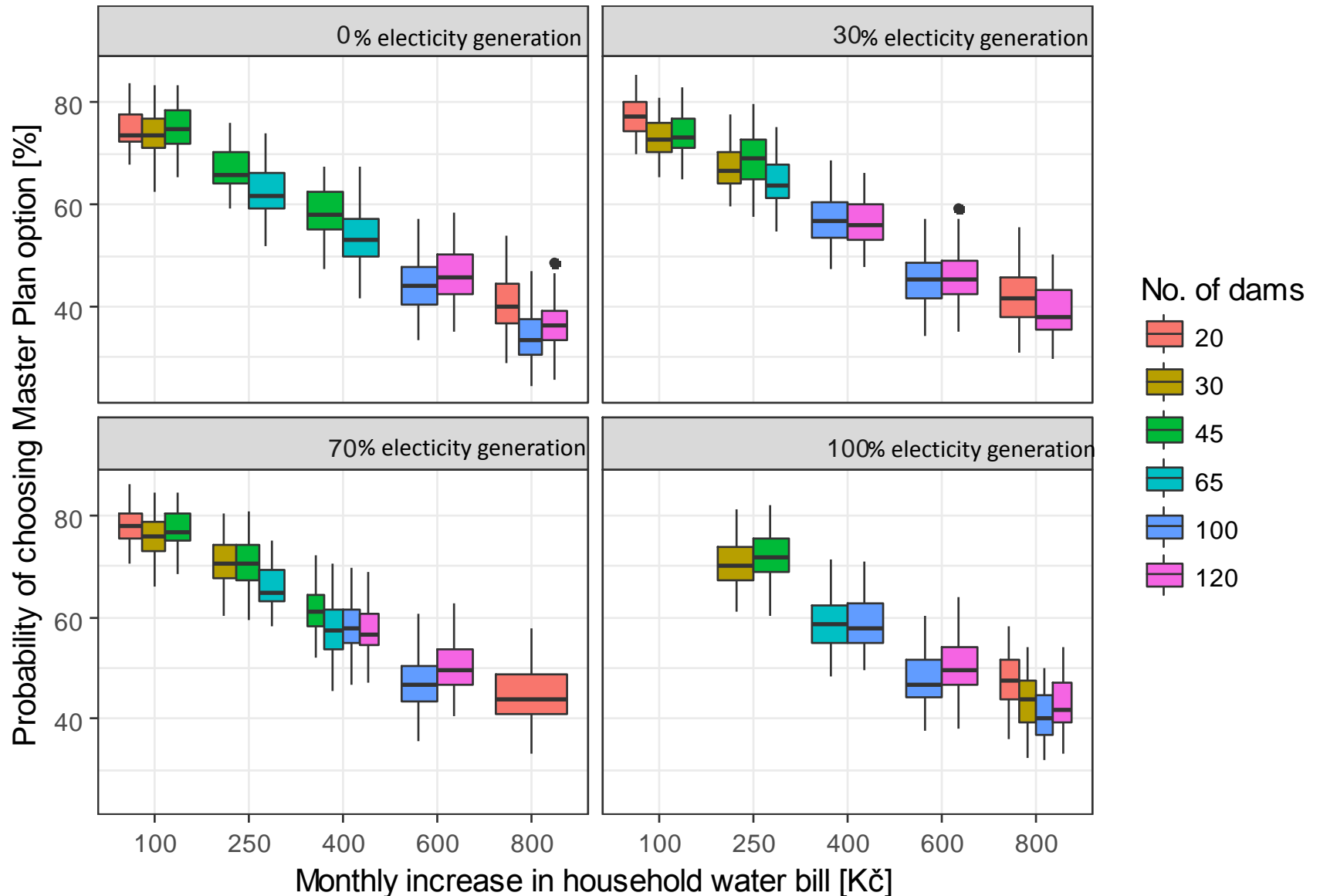
results

probability of choosing Master Plan implementation is negatively correlated with number of dams in the Plan (*and with water bill increase for household*)

variant 2: predicted probability of choice of Master Plan (vs. status quo)



Variant 1 – predicted probability of choosing Master Plan by number of dams in Plan, share of electricity generation and monthly water bill increase



Results (cont'd)

- respondents do not have significantly different preference for flood protection and for water retention use
- hydropower generation use (variant 1) increases probability of choosing the Master Plan, while recreational use decreases this probability (and these effects are comparable in size)
- from various socio-economic characteristics only household income is consistently significant (positive) explanatory variable

Results (cont'd)

predicted willingness to pay

(CZK/month/household, 50% recreational use in Variant 1)

No. of dams in Master Plan	Variant 1				Variant 2
	0 %	30 %	70 %	100 %	
<i>hydropower generation share</i>	0 %	30 %	70 %	100 %	-
20					822
30	595 (*)	624 (*)	662 (*)	691 (*)	698
45					650
65	478 (*)	507 (*)	546 (*)	575 (*)	568
100					409
120	512	541	580	609	397

* no signif. difference in Master Plans with 20/30/45 and with 65/100 dams

Conclusions

- almost 60% of respondents have positive willingness to pay for (some version of) Master Plan as an CC adaptation measure
- willingness to pay is 15-20% higher if dams are equipped with hydropower stations (and similarly lower if recreational use is permitted..) → up to 40% gap between opposite variants 100% hydropower & 0% recreational use vs. 0% hydropower & 100% recreational use
- **total willingness to pay over all Czech households for Master Plan with 65 dams → CZK 27 billion/yr. (€ 1 billion/yr. at exchange rate)**



Thank you for your attention

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