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NEW TARGETING METHODS FOR BOSNIA HERZEGOVINA: Part II

Adequacy of benefits using Alternative Targeting Methods in
the Federation of Bosnia and Herzegovina

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1 Introduction

Social safety nets serve - amongst others - to alleviate extreme poverty through redistribution and constitute a means of last resort to ensure basic living standards for individuals in dire situations. In order to fulfill this objective, social safety nets should be adequate, that is, consisting of individual programs that provide full coverage and meaningful benefits to whichever subset of the population they are meant to assist. Simultaneously, they should strive to provide benefits in a cost-effective manner, channeling most program resources to the intended target group, while economizing administrative costs (cf. Grosh, del Ninno, Tesliuc, & Ouerghi, 2008).

This is Part II of the report on new targeting methods for Bosnia and Herzegovina. In Part I, we simulated new targeting methods and analyzed their potential impact on coverage of the population most in need and the distribution of the potential beneficiaries across the income distribution. The analysis in Part I showed that moving to a proxy-means test (PMT) to identify the poorest households would improve coverage and distribution rates of existing non-contributory transfers. Alternatively, using the information on a household's utility expenditures could also serve as an easy indicator to identify households in need.

While Part I only considered whether a household or individual would receive a benefit or not given a new methodology, Part II simulates the allocation of different transfers and analyzes the distributional impact of the new transfers, their adequacy and poverty reduction impact. In order to determine the benefit level, the current budgets for non-contributory transfers are used as starting point. After discussions with government stakeholders in both entities, notably during the round tables "New Targeting Methods for BiH – Part I" which were held on October 24th (Sarajevo) and 25th (Banja Luka), the team eventually selected three budget scenarios for the simulation.

The main targeting method used to build upon in this report is the PMT model for identification of the poor, distinguishing between urban and rural areas. We also explore the feasibility of a method using electricity expenditures to target poor households. Both methods are employed either in combination with categorical targeting or without. Finally, we analyze the results of using a hybrid model, consisting of a PMT in combination with a filter. In line with the first part of this report, the most recent data available from the 2011 Household Budget Survey (HBS) have been used for analysis.

The report is structured as follows. Chapter 2 describes the scenarios and methodology used for the simulation. Chapter 3 presents the results of the simulation for FBiH and RS (in separate reports) and compares the simulated scenarios with the performance of the current system. Finally, chapter 4 provides a conclusion and policy recommendations.

The report was prepared by a team from the Maastricht Graduate School of Governance: Franziska Gassmann (Team Leader), Eli Stoykova and Daphne François, with the support of IBHI consultants.

2 Methodology

2.1 Simulated scenarios

Three different scenarios are simulated. The scenarios differ with respect to (1) the available budget and (2) the targeting method. In scenario I we simulate the effects of a combination of categorical programs, targeting children and disabled persons, and a needs-based program targeting the poor using a PMT or a model based on electricity expenditures. Scenarios II and III consist of only needs-based programs targeting the poor, using a PMT or a model based on electricity expenditures. In addition, a hybrid model (combining a PMT with a filter) is explored in scenario III. For all three scenarios applies that existing benefits would be replaced with the new transfer(s). This means, in each scenario we have losers (households which would no longer receive a transfer) and winners (households that have previously not received a transfer).

Table 1 – Table 3 show the benefits that will be replaced for each scenario as well as the related budget that will be used for simulations. Note that in scenario II benefits whose purpose is to ensure “equal opportunities” rather than poverty alleviation are not substituted. Thus, as opposed to scenario I, in scenario II long-term care and support benefits and child allowance remain untouched. In scenario III all civilian benefits, including disability benefits, child allowance and maternity benefits, are being replaced by a single program.

- Scenario I

Budget: all civilian non-contributory benefits (see Table 1).

- Transfers replaced by: (i) Categorical (rights-based) transfers for the disabled and for children up to the age of six; (ii) needs-based transfer targeting individuals in the poorest households through a PMT or a model based on electricity expenditures.

- Scenario II

- Budget: Most civilian benefits, except for long-term care and support benefits for the disabled (Table 2).
- Transfers replaced by: a single needs-based program targeting individuals living in poor households through a PMT or a model based on electricity expenditures.

- Scenario III

- Budget: All civilian non-contributory benefits included in scenario I, plus orthopedic benefits for both civilian victims of war and non-war persons with disabilities (please note that in the HBS 2011 there is only 1 respondent who receives an orthopedic benefit in FBiH) and maternity benefits (Table 3).¹

¹ As requested by the Terms of Reference for this project, in scenario III a number of benefits aiming at creating equal opportunities (long-term care and support benefits as well as orthopedic benefits for CVW's as well as non-war PWD's), are being replaced by one program targeted at poor households. In reality, abolishing entirely such benefits might be viewed as inappropriate, as disabled persons – especially those with a high degree of disability – would be deprived of their opportunity to participate in economy and society. This could lead to poverty and social exclusion; two major issues social protection should aim to prevent.

- Transfers replaced by: a single needs-based program targeting individuals living in poor households through a PMT, a hybrid model (PMT+filter) or a model based on electricity expenditures.

In order to calculate the budgets for the simulations in this report, we extrapolated the amounts obtained from the household survey data (HBS 2011) spent on the existing benefits that are to be replaced for each scenario.

Table 1 – Table 3 show the monthly budget by benefit. For instance, for permanent financial assistance the available monthly budget amounts to 1,095,876 BAM.

In addition to the three scenarios described above, simulation of an additional scenario was requested. This scenario would affect the same benefits as in scenario III, but benefits would remain allocated under the same programs as they currently are (all benefit categories would remain). In addition, simulations should be carried out within the budget currently allocated to each benefit. For instance, the current budget for the personal disability benefit for civilian victims of war amounts to 693,781 BAM, which means that the budget we have at our disposal in our simulations for this benefit would be equal to this amount. The change as compared to the current situation would be the fact that each existing benefit would become subject to a new targeting method (a PMT, a model based on electricity expenditures, or a hybrid model). In the process of simulating this scenario, we came to the conclusion that the above would yield meaningless results. Hence, the scenario will not be included due to the following reasons (see Table A 14):

1. Depending on the target group (poorest 10, 15 or 20%), the number of beneficiaries decreases sharply for all benefits;
2. For some benefits, no current beneficiary would be eligible after the application of a PMT. This is for instance the case for maternity benefits;
3. Considering that the number of beneficiaries decrease to very small numbers in comparison to the current situation, spreading the budget for each benefit over the remaining beneficiaries after the application of the PMT, results in very high benefit levels (benefit level = budget for benefit X / beneficiaries for benefit X);
4. For social assistance on the other hand, the number of beneficiaries is much higher than in the current situation. The limited current budget for permanent social assistance, spread over a much larger amount of beneficiaries, would result in very low benefit levels.

Table 1. FBiH Budget (2011): Scenario I

<i>Category of benefit</i>	<i>Total Budget Monthly</i>
<i>Cash and material benefits total</i>	
Permanent financial assistance	1,095,876
<i>Protection of children and families with children</i>	
Child care allowance	1,203,709
<i>Civilian (Non-war) Disabilities</i>	
Personal Disability Benefits	2,184,219
Long term care and support (top up to the personal disability ben)	983,581
<i>Civilian Victims of War (CVW)</i>	
Personal Disability benefit	693,781
Personal monthly allowance	61,778
Long term care and support (top up to the personal disability ben)	160,476
Survivor dependent benefit	423,596
<i>TOTAL Simulation budget for Scenario I</i>	<i>6,807,014</i>

Source: Author's calculations based on HBS 2011.

Table 2. FBiH Budget (2011): Scenario II

<i>Category of benefit</i>	<i>Total Budget Monthly</i>
<i>Cash and material benefits total</i>	
Permanent financial assistance	1,095,876
<i>Civilian (Non-war) Disabilities</i>	
Personal Disability Benefits	2,184,219
<i>Civilian Victims of War (CVW)</i>	
Personal Disability benefit	693,781
Personal monthly allowance	61,778
Survivor dependent benefit	423,596
<i>TOTAL Simulation budget for Scenario II</i>	<i>4,459,249</i>

Source: Author's calculations based on HBS 2011.

Table 3. FBiH Budget (2011): Scenario III

<i>Category of benefit</i>	<i>Total Budget Monthly</i>
<i>Cash and material benefits total</i>	
Permanent financial assistance	1,095,876
<i>Protection of children and families with children</i>	
Maternity benefits	1,030,236
Child care allowance	1,203,709
<i>Civilian (Non-war) Disabilities</i>	
Personal Disability Benefits	2,184,219
Long term care and support (top up to the personal disability ben)	983,581
Orthopedic benefit	-
<i>Civilian Victims of War (CVW)</i>	
Personal Disability benefit	693,781
Long term care and support (top up to the personal disability ben)	160,476
Orthopedic benefit	14,484
Survivor dependent benefit	205,680
Monthly personal cash benefit / Additional financial assistance	61,778
<i>TOTAL Simulation budget for Scenario III</i>	<i>7,633,818</i>

Source: Author's calculations based on HBS 2011.

2.2 Rationale behind using the budget extrapolated from HBS 2011 for the simulated scenarios

Through our simulations we aim to investigate to what extent our selected alternative targeting methods improve targeting of poor households in BiH and how successful they are in channeling given budgets towards these households. In addition, we want to see the effect on poverty of reallocating budget amounts from selected currently existing programs to a social assistance program targeted at the poor through alternative methods.

The impact on poverty can be estimated by (step 1) comparing current household income – before reallocating benefits – with the poverty line and (step 2) comparing the simulated household income – after reallocating benefits – with the poverty line. For instance, if changing the targeting method was successful in terms of shifting resources towards the poor, it would result in fewer households with income lower than the poverty line after the reallocation as compared to the current situation. Note that household income in surveys is often underestimated². Information on expenditures provides a more accurate estimate of a household's true income, and is therefore used as proxy for total household income.

Figure 1. Reallocation of civilian benefits using new targeting methods

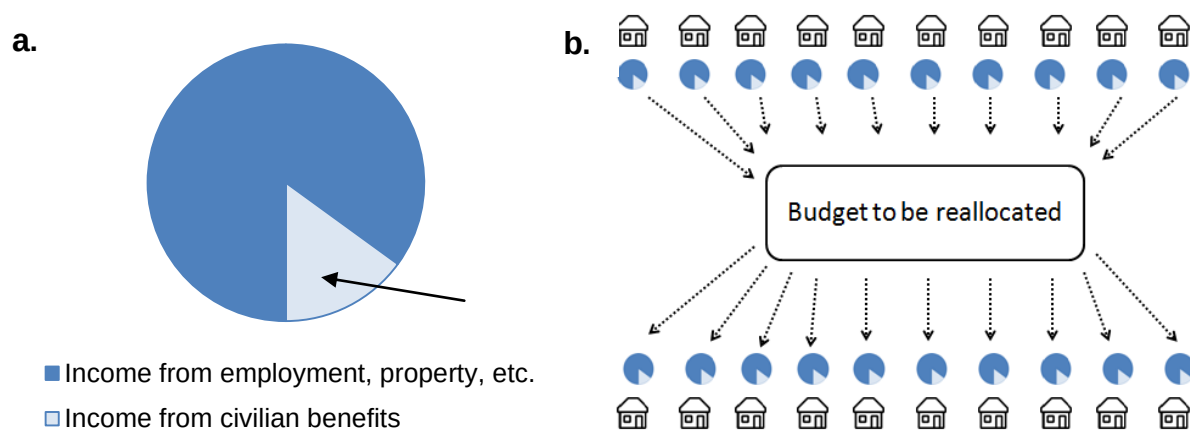


Figure 1 shows how reallocation of civilian benefits is realized in our simulations. For each household we change total household income (a.) by changing the part of the income acquired from civilian benefits, indicated by the arrow. This may result in the fact that some households, which are eligible for a benefit in the current situation, are no longer eligible after reallocation of benefits in our simulations or vice versa. In addition, for certain benefits we change benefit levels and some might be abolished and replaced by new benefits.

To achieve this reallocation of resources, we first take away the income of those benefits that will be replaced from each household's income and subsequently calculate the total budget we have at hand for reallocation by adding up these amounts (b.). In a next step, we replace / abolish programs and apply our new targeting methods in order to identify newly eligible individuals. Finally, we reallocate our collected budget towards those households that are identified as poor.

The above procedure requires us to collect three types of information on each household. In the first place, we need to know total household consumption to approximate total household

² Income in household surveys is often underestimated due to various reasons. Not all households reveal their true income in a survey or they may report fewer earnings than actually received or because of seasonal effects.

income. In addition, we need information related to a household's eligibility for a benefit. For instance, if eligibility is dependent on certain criteria that have to be inserted in a PMT-formula, we need to have household information on all of these criteria. Finally, we need to know the amount of household income acquired from civilian benefits. From these amounts we derive the budget to be reallocated for each scenario (the sum of each household's income from civilian benefits to be replaced). We obtain all of this information from the same source – the HBS 2011 – for a representative sample of 7,400 households.

Note that the budget to be reallocated for each scenario derived from the HBS 2011 differs from the corresponding amounts obtained from calculations based on FBIH budget data for 2011 provided by the Ministries and CSW (see Table A 5 in the Appendix for more details). The amounts obtained from administrative data are significantly higher than those extrapolated from the survey.

2.3 Targeting methods

For each of the three scenarios the households most in need of support are identified using the best-performing PMT targeting model based on the first part of this study: *'New Targeting Methods for Bosnia Herzegovina: Part I'*. In addition, for all three scenarios we used a model which identifies poor households by their level of utility expenditures. For the first scenario we use both models in combination with categorical targeting. Finally, for the third scenario, we also use a hybrid model, which combines a PMT with a filter.

In the first part of this study – considering that entity-specific living conditions vary – PMT models were estimated for RS and FBIH separately, and within each entity also for urban and rural areas. In a next step, consumption of each household in the sample was estimated using the PMT formula obtained through regression analysis. Finally, the poorest 10, 15 or 20% of all individuals were identified using three different eligibility thresholds.

The utility model uses households' expenditures on electricity to identify eligible individuals in poor households. Based on monthly per adult equivalent expenditures on electricity (OECD 1), the poorest 10, 15 and 20% of individuals are identified. A major advantage of using utility expenditures as a targeting mechanism for identification of the poor is that it is considerably less administratively demanding than, for instance, the PMT.

Finally, the third scenario also explores the performance of a hybrid model, combining a PMT with a filter. Filters serve to reduce the inclusion error (the number of non-poor households that are wrongly identified as eligible for a benefit). Of all filters tested in the first part of this study, excluding households which possess a garage reduced the inclusion error significantly, while at the same time having a limited impact on the exclusion error (the number of poor households not identified as eligible for a benefit). Thus, for the hybrid model in scenario 3, only members of households eligible under a PMT *and* not possessing a garage are beneficiaries.

For a more extensive description of the different targeting methodologies, please refer to Part I of this study; *'New Targeting Methods for Bosnia Herzegovina: Part I'*.

Besides the needs-based program targeting the poor, in scenario I two rights-based programs are simulated: a universal child benefit and a universal disability benefit. Although child allowance in FBIH is compulsory by law, currently it is only provided in five out of ten cantons and in each canton is subject to different rules and regulations. This results in varying benefit levels between different cantons as well as the fact that in some cantons child care allowance is means-tested whereas in others it is not. In our simulations child care

allowance will be provided in all cantons to all children younger than six years old and will not be means-tested.

Disability benefits are currently provided in all cantons, but conditions vary for different groups of disabled, notably for disabled veterans, disabled who are civilian victims of war and non-war disabled persons. Given that we only use the budget for civilian benefits for scenario I, the universal disability benefit is allocated to non-veteran disabled persons.

The HBS data do not contain any information on levels of disability. For the simulations disability benefits are provided to persons that are currently receiving a long-term care and support benefit as a civilian victim or as a non-war person with a disability.

2.4 Target groups

Following the first part of the report *'New targeting methods in Bosnia Herzegovina: Part I'*, we identify eligible individuals on the basis of three program sizes, covering

- 1) the poorest 10%;
- 2) the poorest 15%; or
- 3) the poorest 20% of individuals within the population.

Depending on the program size chosen, eligibility thresholds are defined. For instance, when using electricity expenditures as a targeting mechanism, the eligibility threshold would correspond to some maximum level of electricity expenditures with all households below this level being eligible for a benefit. Targeting a smaller part of the population (e.g. 10%) thus requires a lower threshold than aiming to reach a larger share of the poor (e.g. 20%).

Note that for the hybrid model (PMT + filter) program sizes are smaller. This is due to the way in which eligible households are identified when applying a filter. In a first step the poorest 10, 15 or 20% of individuals are identified using a PMT. In a next step, the number of eligible individuals is reduced by leaving out those individuals that live in households possessing a garage.

2.5 Benefit types simulated

Benefit levels are usually dependent on two main factors. In the first place they are a product of the goal of the program, for instance, increasing consumption, increasing school enrollment or increasing usage of health facilities. Ideally, they should be set at the "smallest amount necessary to achieve the desired impact on intended outcomes" (cf. Grosh, del Ninno, Tesliuc, & Ouerghi, 2008). In the second place, they are a product of the program's budget constraint.

Within the framework of this project, the main goal is poverty reduction. A first step in this case is to assess the affordability of covering the gap between the eligibility threshold and the real consumption of the poor, i.e. of bringing the poor to the poverty line. In reality, this is rarely achievable due to limited budget availability.

In our simulations we test the poverty impact of the following two alternative techniques for allocating the available budget among individuals within eligible households:

- Flat benefit;
- Progressive graduated benefit.

Flat Benefit

The flat benefit is based on the most simplified method of distributing a budget among the eligible persons. Using this method, each beneficiary is allocated an equal benefit amount. For the purpose of our simulations we define the benefit level on the basis of the available budget and the number of beneficiaries. The formula used for calculation of the individual benefit level is displayed below.

$$\text{Flat benefit amount} = \text{Available budget} / \text{Number of beneficiaries}$$

The aim of this simulation is to show what impacts can be achieved on poverty - exploring a number of different benefit options – within the budget limits of the three scenarios. In addition to the available budget, benefit levels for each scenario are thus dependent on the size of the program, i.e. on the number of beneficiaries. Logically, a bigger program size will result in lower benefit levels.

When allocating the same benefit amount to each beneficiary, different magnitudes of need are not accounted for. In other words: individuals with a consumption level far below the poverty line receive an equal benefit than those with a consumption level just below the poverty line. Therefore, aside from assigning flat benefits, we also explore a more progressive method for allocation of the budget in our simulations through defining benefit levels for different poverty brackets.

Progressive graduated benefit

This method for defining benefit levels is based on partitioning the target group into three smaller groups (brackets) ordered by welfare level, which allows separate groups of beneficiaries to receive different benefit amounts. By doing so, the depth of poverty is taken into account: the poorest of the poor will receive a higher benefit than those that are closer to the poverty line. In this report, graduated benefits are simulated for targeting the bottom 15% and bottom 20% of the income distribution. Each of these two target groups is divided into three brackets:

- for a program size of 15% the brackets are i) bottom 5%, ii) 5-10%, and iii) 10-15% of the consumption distribution;
- for a program size of 20% the brackets are i) bottom 10%, ii) 10-15%, and iii) 15-20% of the consumption distribution.

In order to arrive at a benefit amount for each bracket we multiply the flat benefit by a coefficient. The coefficient for the bracket at the bottom of the consumption distribution is the largest, the one for the middle group – medium, and the coefficient for the top group is the smallest. That way a more progressive distribution of benefits can be achieved, so that beneficiaries from the group with a lower consumption level receive a higher benefit amount and vice versa.

Table 4 shows the coefficients by which we multiply the flat benefit amount to calculate the benefit levels for the different brackets. Note that for the hybrid model (PMT+filter) coefficients are slightly smaller for all brackets.

Table 4. Coefficients for calculation of graduated benefits, program sizes 15 and 20%

<i>Brackets</i>	<i>Coefficients</i>
<i>Program size 15%</i>	
Bracket I: Poorest 0 – 5 %	1.5
Bracket II: Poorest 5 – 10%	1
Bracket III: Poorest 10 –15%	0.5
<i>Program size 20%</i>	
Bracket I: Poorest 0 – 10%	1.4
Bracket II: Poorest 10 –15%	0.8
Bracket III: Poorest 15 – 20%	0.4

Source: Author's calculations.

When aiming at a progressive distribution of benefits, the graduated benefit method is generally less accurate than defining the benefit amount as the difference between some minimum consumption/income level (e.g. the poverty line) and the consumption/income level of the beneficiary. However, using the latter method leads to allocating very small benefit amounts to individuals whose income/consumption level is close to the threshold. Moreover, this method involves work disincentives since it practically guarantees a certain minimum level of income.

2.6 Benefit levels

For each scenario, different benefit options have been simulated. As discussed above, eligibility for the needs-based program (social assistance) is tested through a PMT, a model based on electricity expenditures or a hybrid model (PMT + filter).

Table 5 shows the resulting monthly benefit levels in BAM for different benefit options. Benefits are either allocated by providing a flat benefit to the poorest 10% of the population (a), the poorest 15% of the population (b) or the poorest 20% of the population (c), or by allocating graduated benefits to the poorest 15% of the population (d) or the poorest 20% of the population (e). Note that, because in the third scenario the total number of beneficiaries for a hybrid model (PMT + filter) is smaller than for the other targeting methods, benefit levels are comparably higher. Benefit levels shown in Table 5 are calculated on the individual level and must be multiplied by the household size to arrive at the total benefit allocated to a household.

Rights-based programs for child allowance and disability benefits, only existing in scenario I, are subject to categorical targeting. Flat benefits are provided to all eligible persons, without being subject to a means-test. For disability benefits the benefit level has been set at 138 BAM monthly. This is the current amount for civilian disabled who have a disability level of 90%. Benefit levels within those cantons that provide child care allowance vary between 12 and 33 BAM and in some cantons are means-tested. For our simulations benefit levels for child care allowance are set at a level of 12 BAM and will not be means-tested.

Table 5. Benefit levels for different benefit options, in BAM, PMT model³, scenario I - III

Targeting mechanism	Target group		Scenario			
	Target group	Sub- target group (bracket)	I	II	III	III
PMT... (without / with filter)			...no filter	...no filter	...no filter	...with filter
Social Assistance						
<i>Flat Benefit</i>						
a. Flat benefit per individual	Poorest 10%	-	22	22	37	44
b. Flat benefit per individual	Poorest 15%	-	15	15	25	32
c. Flat benefit per individual	Poorest 20%	-	11	11	19	25
<i>Graduated Benefit</i>						
d. Graduated benefit per individual	Poorest 15%	Poorest 0-5%	23	22	37	45
		Poorest 5-10%	15	15	25	29
		Poorest 10-15%	8	7	12	16
e. Graduated benefit per individual	Poorest 20%	Poorest 0-10%	15	15	26	33
		Poorest 10-15%	9	9	15	20
		Poorest 15-20%	4	4	8	10
Categorical Disability benefit	All current					
Flat benefit per individual	Beneficiaries	-	138	-	-	-
Categorical Child benefit	All children below					
Flat benefit per individual	six years old	-	12	-	-	-

Source: Author's calculations.

³ Please note that the benefit amounts allocated to individuals when using the PMT model without filter for targeting are similar to those when using the electricity expenditures model (see Annex).

2.7 Poverty line

Since the OECD1 equivalence scale is used consistently throughout the report '*New Targeting Methods for Bosnia Herzegovina*', it is necessary to apply a comparable poverty line when assessing the poverty impact of the simulations. Therefore, for estimation of the poverty indicators we adopt a relative poverty line defined at 60% of the median per adult equivalent consumption, applying the OECD1 equivalence scale. The amount of the poverty line, calculated for the current situation, is used throughout the report as a fixed poverty line and is used to assess all simulated options. It amounts to 350 BAM monthly per adult equivalent.

The difference between the OECD I relative poverty line of 350 BAM Per Adult Equivalent (PAE) per month in 2011 for FBiH used in this report and the official poverty line of 416 BAM PAE per month calculated by the BHAS is due to the usage of different equivalence scales. The BHAS official relative poverty line for 2011 was calculated using the OECD II poverty line, which assigns the value 1 to the first adult, 0.5 to every next adult and 0.3 to each child and is more appropriate for developed countries. Using the OECD2 scale in the case of Bosnia and Herzegovina, where – especially among poor households – a relatively large share of household consumption is allocated to food, could potentially underestimate the consumption needs of additional household members. Therefore, for the calculation of the poverty line used in this report we used the OECD I equivalence scale, which is more appropriate for countries in transition. It assigns the value 1 to the first adult, 0.7 to every next adult and 0.5 to each child.

Note that, when measuring the poverty impact of replacing existing transfers with new transfers, we assume no substitution effect of current income due to, for instance, work disincentives. In other words, the current consumption level of new beneficiaries is simply topped up with the new transfer and for those individuals that lose benefits in the simulations the benefit amount is subtracted from their consumption.

3 *Presentation and interpretation of results*

This part of the report aims to evaluate the adequacy of alternative targeting methods. To interpret the results it is important to clarify what “adequacy of alternative targeting methods” entails. In our simulations, a large part of the budget is allocated towards social assistance. One of the key goals of social assistance is to reduce poverty and economic hardship. The adequacy of benefits allocated through such programs is thus dependent on whether or not they are delivered in a way and at levels that allow households to leave poverty (cf. Nelson, 2010).

In order to paint a comprehensive picture of the adequacy of the alternative targeting methods used in our simulations, in our interpretation of the results we evaluate:

- Changes in numbers of beneficiaries;
- The winners and losers of changing targeting methods and replacing benefits;
- Changes in the distribution of benefits among poor and non-poor households and in the share of benefits in post-transfer household consumption;
- The impact on poverty.

Throughout this evaluation, we focus on the first consumption quintile (i.e. the poorest 20% of the population) and evaluate in what way and to what extent this quintile is affected by our simulated changes.

For a comprehensive evaluation of the fairness of allocation of funds, coverage and distribution of beneficiaries must be taken into account. Although this has been extensively evaluated in part I of this study “*New Targeting Methods for BiH*”, we nevertheless include an evaluation of coverage and distribution of beneficiaries of scenario III in this report.

3.1 *Changes in numbers of beneficiaries*

In all scenarios we simulate programs of three different sizes: we target the poorest 10, 15 and 20% of total population. Table 6 displays (a) the number of current beneficiaries of those programs that are being substituted as well as (b) the number of beneficiaries in the three program sizes simulated. Please note that for equal program sizes numbers of beneficiaries vary slightly (+/-1000 individuals), depending on the targeting method used. This is due to the fact that the eligible households identified with a PMT are not identical to those identified through the electricity expenditures method.

Table 6 shows that all simulated programs, even the hybrid model (PMT+filter) which has the smallest number of beneficiaries, cover more households/individuals than the currently existing programs. In other words, many individuals who currently do not receive benefits are covered in the simulated scenarios.

Additionally, in scenario III we explore the effect of applying a filter after targeting with a PMT. This option results in reduction of the population covered by a simple PMT, since it excludes the households owning a garage from the eligible group.

Table 6. Number of beneficiaries and corresponding number of beneficiary households - current situation and simulated options, different targeting methods and program sizes, FBiH

	Covered population (in % of total population)	Number of beneficiary households	Number of beneficiaries
<i>a. Current situation: programs to be replaced</i>			
Current situation / Transfers to be replaced in scenario 1	4.8%	25,339	153,063
Current situation / Transfers to be replaced in scenario 2	2.3%	45,185	73,425
Current situation / Transfers to be replaced in scenario 3	5.1%	47,185	162,879
<i>b. Simulated programs</i>			
PMT targeting – program size 10%	10.0%	46,971	203,988
PMT targeting – program size 15%	15.0%	73,197	305,549
PMT targeting – program size 20%	20.0%	102,240	407,114
Electricity expenditures targeting – program size 10%	10.0%	46,349	204,455
Electricity expenditures targeting – program size 15%	15.0%	71,315	306,885
Electricity expenditures targeting – program size 20%	20.0%	97,098	409,683
Applying a filter after PMT targeted at the poorest 10%	8.6%	40,986	174,223
Applying a filter after PMT targeted at the poorest 15%	11.7%	59,731	237,429
Applying a filter after PMT targeted at the poorest 20%	14.9%	80,561	302,984

Source: Calculations based on HBS 2011 data.

3.2 Winners and losers

Since in our simulations various currently existing benefits are being substituted with new benefits, which are targeted using alternative methods, the different simulated scenarios result in different individuals being included in the group of eligible persons. For instance, a person previously receiving a personal disability benefit might not be eligible anymore when this benefit is replaced with a poverty alleviation program based on targeting using a PMT. Such a person would be a 'loser' from the simulated reform. Simultaneously, another person – with a low consumption level, for instance – who is not eligible for any of the existing programs being replaced in the simulations might start receiving benefits in some of the scenarios. This person would be a 'winner' from the simulated change. Since we are aiming to shift resources towards individuals in poor households, winners in the first consumption quintile are in our interest.

Table 7 - Table 14 display how the eligible persons change when applying new targeting methods to target a population of different size in the three scenarios. Note that the tables distinguish between different benefits (categorical versus needs-based) as well as different targeting methods (PMT versus electricity expenditures; also versus a hybrid method in scenario III).

Table 7 shows the winners, losers and remaining beneficiaries of child care allowance as a share of the total population. Looking at that table we can see that, as a result of the categorical targeting, the children starting to receive benefits are almost equally spread across the consumption distribution quintiles. Nevertheless, there are slightly more winners in the first quintile. Please note that in the simulation of scenario I the new categorically-targeted disability benefits are distributed to the current beneficiaries of Long Term Care and Support benefits, thus all beneficiaries of Long Term Care and Support benefits remain beneficiaries of the new disability benefit, hence there are no losers and winners.

Looking at Table 7 -Table 14, it can be seen that the more generous the model in terms of its program size, the more winners there are, especially among the poor. Naturally, targeting a larger part of the population leads to more winners. When using a PMT model as compared to a model based on electricity expenditures, the number of winners in the first quintile is generally larger and the number of losers smaller. This shows that the PMT is a more accurate targeting method than a model based on electricity expenditures.

For the third scenario, we explore the use of a PMT with a filter in addition to a plain PMT and a model based on electricity expenditures (see Table 14). Differences between the losers and winners without and with filter on top of the PMT illustrate the effect a filter typically has: while the share of winners in the first quintile is slightly smaller when applying a filter, the share of losers is slightly larger. This is the result of reducing the inclusion error, but at the same time unavoidably increasing the exclusion error.

Table 7. Winners and losers from the simulated reform (in % of total population), by quintiles of pre-transfer consumption, child allowance, scenario I, FBiH

<i>Child allowance</i>	<i>Q1</i>	<i>Q2</i>	<i>Q3</i>	<i>Q4</i>	<i>Q5</i>	<i>Total</i>
Losers	0.3%	0.3%	0.1%	0.1%	0.1%	0.8%
Winners	1.3%	1.1%	1.0%	1.0%	0.9%	5.3%
Remain beneficiaries	0.2%	0.1%	0.1%	0.1%	0.0%	0.5%

Source: Author's calculations based on HBS 2011. *Note:* Consumption quintiles are based on monthly per adult equivalent consumption (OECD 1 scale) before allocation of transfers that are to be replaced in scenario I.

Table 8. Winners and losers from the simulated reform (in % of total population), by quintiles of pre-transfer consumption, PMT model, scenario I, FBiH

<i>PMT model</i>		<i>Q1</i>	<i>Q2</i>	<i>Q3</i>	<i>Q4</i>	<i>Q5</i>	<i>Total</i>
<i>Program Size</i>							
	<i>10%</i>						
Losers		0.9%	0.8%	0.4%	0.4%	0.4%	2.8%
Winners		6.9%	1.6%	0.5%	0.1%	0.1%	9.2%
Remain beneficiaries		0.7%	0.1%	0.0%	0.0%	0.0%	0.8%
	<i>15%</i>						
Losers		0.5%	0.7%	0.3%	0.4%	0.4%	2.2%
Winners		9.1%	2.8%	1.0%	0.6%	0.1%	13.6%
Remain beneficiaries		1.1%	0.2%	0.0%	0.0%	0.0%	1.4%
	<i>20%</i>						
Losers		0.4%	0.6%	0.3%	0.4%	0.3%	2.0%
Winners		11.1%	4.5%	1.7%	0.9%	0.2%	18.4%
Remain beneficiaries		1.2%	0.3%	0.0%	0.0%	0.1%	1.6%

Source: Author's calculations based on HBS 2011. *Note:* Consumption quintiles are based on monthly per adult equivalent consumption (OECD 1 scale) before allocation of transfers that are to be replaced in scenario I.

Table 9. Winners and losers from the simulated reform (in % of total population), by quintiles of pre-transfer consumption, electricity expenditures model, scenario I, FBiH

<i>Electricity expenditure model</i>		Q1	Q2	Q3	Q4	Q5	<i>Total</i>
<i>Program Size</i>							
	10%						
Losers		1.0%	0.8%	0.4%	0.4%	0.4%	3.0%
Winners		5.0%	2.5%	1.1%	0.4%	0.4%	9.4%
Remain beneficiaries		0.5%	0.1%	0.0%	0.0%	0.0%	0.6%
	15%						
Losers		0.9%	0.8%	0.4%	0.4%	0.4%	2.8%
Winners		6.4%	3.9%	2.1%	1.1%	0.7%	14.2%
Remain beneficiaries		0.7%	0.1%	0.0%	0.0%	0.0%	0.8%
	20%						
Losers		0.9%	0.7%	0.4%	0.4%	0.3%	2.7%
Winners		8.2%	5.0%	3.0%	1.9%	0.9%	19.1%
Remain beneficiaries		0.7%	0.2%	0.0%	0.0%	0.1%	0.9%

Source: Author's calculations based on HBS 2011. Note: Consumption quintiles are based on monthly per adult equivalent consumption (OECD 1 scale) before allocation of transfers that are to be replaced in scenario I.

Table 10. Winners and losers from the simulated reform (in % of total population), by quintiles of pre-transfer consumption, PMT model, scenario II, FBiH

<i>PMT model</i>		Q1	Q2	Q3	Q4	Q5	<i>Total</i>
<i>Program Size</i>							
	10%						
Losers		0.9%	0.8%	0.4%	0.4%	0.4%	2.8%
Winners		6.9%	1.6%	0.5%	0.1%	0.1%	9.2%
Remain beneficiaries		0.7%	0.1%	0.0%	0.0%	0.0%	0.8%
	15%						
Losers		0.5%	0.7%	0.3%	0.4%	0.4%	2.2%
Winners		9.1%	2.8%	1.0%	0.6%	0.1%	13.6%
Remain beneficiaries		1.1%	0.2%	0.0%	0.0%	0.0%	1.4%
	20%						
Losers		0.4%	0.6%	0.3%	0.4%	0.3%	2.0%
Winners		11.1%	4.5%	1.7%	0.9%	0.2%	18.4%
Remain beneficiaries		1.2%	0.3%	0.0%	0.0%	0.1%	1.6%

Source: Author's calculations based on HBS 2011. Note: Consumption quintiles are based on monthly per adult equivalent consumption (OECD 1 scale) before allocation of transfers that are to be replaced in scenario II.

Table 11. Winners and losers from the simulated reform (in % of total population), by quintiles of pre-transfer consumption, electricity expenditures model, scenario II, FBiH

<i>Electricity expenditure model</i>		Q1	Q2	Q3	Q4	Q5	<i>Total</i>
<i>Program Size</i>							
	10%						
Losers		1.0%	0.8%	0.4%	0.4%	0.4%	3.0%
Winners		5.0%	2.5%	1.1%	0.4%	0.4%	9.4%
Remain beneficiaries		0.5%	0.1%	0.0%	0.0%	0.0%	0.6%
	15%						
Losers		0.9%	0.8%	0.4%	0.4%	0.4%	2.8%
Winners		6.4%	3.9%	2.1%	1.1%	0.7%	14.2%
Remain beneficiaries		0.7%	0.1%	0.0%	0.0%	0.0%	0.8%
	20%						
Losers		0.9%	0.7%	0.4%	0.4%	0.3%	2.7%
Winners		8.2%	5.0%	3.0%	1.9%	0.9%	19.1%
Remain beneficiaries		0.7%	0.2%	0.0%	0.0%	0.1%	0.9%

Source: Author's calculations based on HBS 2011. Note: Consumption quintiles are based on monthly per adult equivalent consumption (OECD 1 scale) before allocation of transfers that are to be replaced in scenario II.

Table 12. Winners and losers from the simulated reform (in % of total population), by quintiles of pre-transfer consumption, PMT model, scenario III, FBiH

<i>PMT model</i>		<i>Q1</i>	<i>Q2</i>	<i>Q3</i>	<i>Q4</i>	<i>Q5</i>	<i>Total</i>
<i>Program Size</i>							
	<i>10%</i>						
Losers		1.6%	1.8%	1.1%	1.0%	0.8%	6.3%
Winners		6.0%	1.5%	0.5%	0.1%	0.1%	8.3%
Remain beneficiaries		1.4%	0.2%	0.0%	0.0%	0.0%	1.7%
	<i>15%</i>						
Losers		1.2%	1.7%	1.0%	1.0%	0.8%	5.6%
Winners		8.3%	2.8%	1.0%	0.6%	0.1%	12.7%
Remain beneficiaries		1.9%	0.3%	0.1%	0.0%	0.0%	2.3%
	<i>20%</i>						
Losers		1.0%	1.5%	0.9%	0.9%	0.7%	5.0%
Winners		10.1%	4.4%	1.6%	0.8%	0.2%	17.0%
Remain beneficiaries		2.0%	0.5%	0.2%	0.1%	0.1%	2.9%

Source: Author's calculations based on HBS 2011. Note: Consumption quintiles are based on monthly per adult equivalent consumption (OECD 1 scale) before allocation of transfers that are to be replaced in scenario III.

Table 13. Winners and losers from the simulated reform (in % of total population), by quintiles of pre-transfer consumption, electricity expenditures model, scenario III, FBiH

<i>Electricity expenditure model</i>		<i>Q1</i>	<i>Q2</i>	<i>Q3</i>	<i>Q4</i>	<i>Q5</i>	<i>Total</i>
<i>Program Size</i>							
	<i>10%</i>						
Losers		2.0%	1.9%	1.0%	1.0%	0.7%	6.7%
Winners		4.4%	2.5%	1.0%	0.4%	0.4%	8.7%
Remain beneficiaries		1.0%	0.1%	0.1%	0.0%	0.0%	1.3%
	<i>15%</i>						
Losers		1.8%	1.8%	0.9%	1.0%	0.7%	6.2%
Winners		5.8%	3.8%	2.0%	1.1%	0.6%	13.2%
Remain beneficiaries		1.2%	0.2%	0.1%	0.1%	0.1%	1.8%
	<i>20%</i>						
Losers		1.6%	1.5%	0.9%	0.9%	0.7%	5.6%
Winners		7.4%	4.7%	2.9%	1.8%	0.9%	17.7%
Remain beneficiaries		1.5%	0.5%	0.1%	0.1%	0.1%	2.4%

Source: Author's calculations based on HBS 2011. Note: Consumption quintiles are based on monthly per adult equivalent consumption (OECD 1 scale) before allocation of transfers that are to be replaced in scenario III.

Table 14. Winners and losers from the simulated reform (in % of total population), by quintiles of pre-transfer consumption, PMT + filter, scenario III, FBiH

<i>PMT + filter</i>		<i>Q1</i>	<i>Q2</i>	<i>Q3</i>	<i>Q4</i>	<i>Q5</i>	<i>Total</i>
<i>Program Size before filter</i>							
	<i>10%</i>						
Losers		1.8%	1.8%	1.1%	1.0%	0.8%	6.5%
Winners		5.3%	1.3%	0.4%	0.1%	0.1%	7.1%
Remain beneficiaries		1.2%	0.2%	0.0%	0.0%	0.0%	1.4%
	<i>15%</i>						
Losers		1.5%	1.8%	1.0%	1.0%	0.8%	6.1%
Winners		6.6%	2.1%	0.5%	0.4%	0.1%	9.8%
Remain beneficiaries		1.5%	0.2%	0.1%	0.0%	0.0%	1.9%
	<i>20%</i>						
Losers		1.4%	1.6%	0.9%	1.0%	0.8%	5.7%
Winners		7.8%	3.1%	1.0%	0.5%	0.2%	12.6%
Remain beneficiaries		1.6%	0.4%	0.1%	0.1%	0.0%	2.3%

Source: Author's calculations based on HBS 2011. Note: Consumption quintiles are based on monthly per adult equivalent consumption (OECD 1 scale) before allocation of transfers that are to be replaced in scenario III.

3.3 Distribution of benefits and average share of benefits in post-transfer consumption of beneficiary households

In this section we evaluate (1) the distribution of benefits across consumption quintiles and (2) the average share of benefits in post-transfer household consumption across consumption quintiles. The formulae used to calculate these measures are included in the annex. It should be noted that each scenario is based on a different pre-transfer consumption, which may result in slightly different ranking of the households in quintiles for scenario I-III.

Scenario I

Figure 2 and Figure 3 show the distribution of benefits by consumption quintiles, while Figure 4 shows the average share of benefits in post-transfer consumption of beneficiary households for the first consumption quintile in scenario I. The red arrows designate the estimated distribution and shares of benefits in household consumption in the existing situation. Different benefit options are shown for two targeting methods: a PMT in combination with categorical targeting as well as a model based on electricity expenditures in combination with categorical targeting.

Figure 2 and Figure 3 illustrate that the benefits of the three new programs as a whole (child benefits, disability benefits and social assistance) are much more efficiently distributed towards the poor as compared to the existing situation. Currently 41.3% of total benefits are received by poor households whereas the new targeting methods have the potential to increase this share to up to 63.5%. This result is achieved when allocating benefits for the social assistance program with flat benefit levels targeted through a PMT towards the 10% poorest individuals.

Channeling resources towards the poor is more efficient using a PMT as compared to a targeting mechanism based on electricity expenses. However, considering that for the electricity expenditure model eligibility is easier to verify and is considerably less administratively demanding, it constitutes a good alternative to the PMT model.

Naturally, when the program size increases, a smaller share of the total budget reaches the first quintile due to increasing leakage of resources towards other quintiles. Analysis of distribution of beneficiaries in Part I of this study - *'New Targeting Methods for Bosnia Herzegovina, Part I'* - showed that a larger program size goes hand in hand with a larger inclusion error⁴, which causes this leakage of resources to the non-poor.

In the case of flat benefits allocated using PMT, the share of total benefits reaching the first consumption quintile ranges from 63.5% for a program size of 10% to 53.3% for a program size of 20%. This means that, for instance, when targeting the poorest 10% using flat benefits, 36.5% of the total budget is in fact allocated to the non-poor part of the population. These shares follow the same pattern for targeting based on electricity expenses but are somewhat lower than in the case of using PMT. In comparison to the other scenarios, even for the smallest program size leakage is relatively large. This is due to the fact that child care allowance and disability benefits are rights-based instead of targeted towards the poor. As

⁴ The inclusion error is the share of total beneficiaries that are receiving a benefit although they do not belong to the actual target group (100% minus the share of beneficiaries belonging to the poorest quintile).

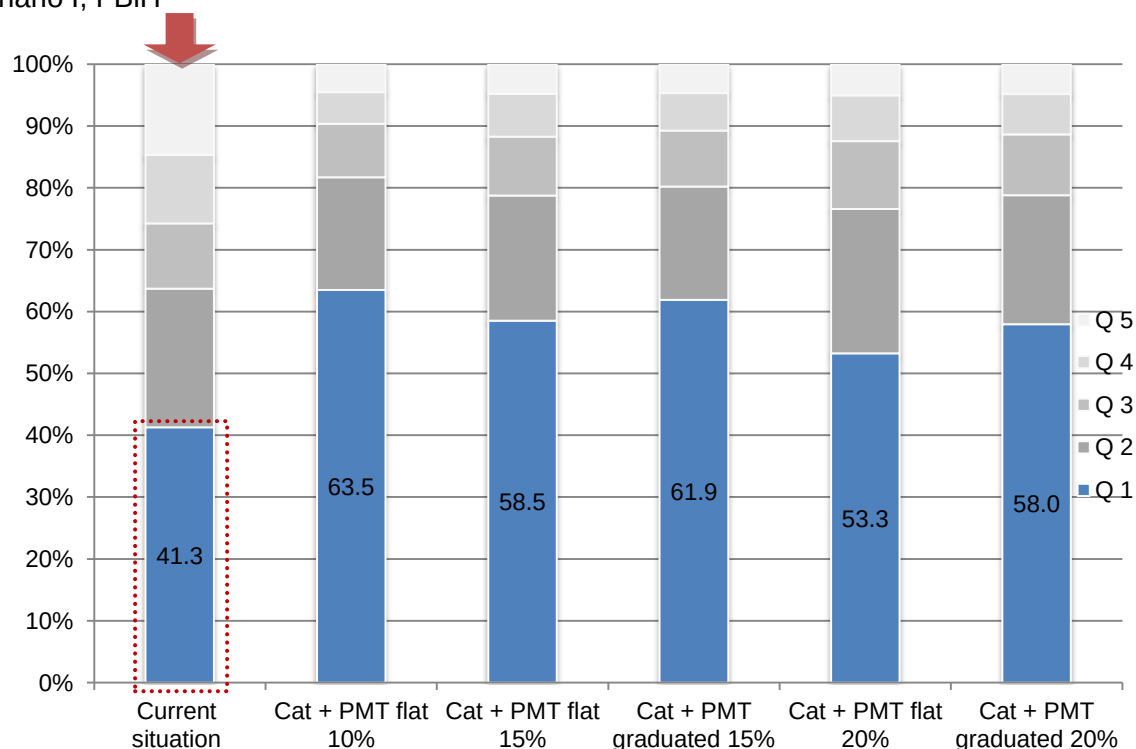
these benefits are not means-tested their distribution is not as concentrated in the first consumption quintile.

Comparing graduated benefits and flat benefits for equal program sizes (e.g. a flat benefit for a program size of 15% with a graduated benefit for a program size of 15%), we can see that benefits allocated through brackets consistently show a more pro-poor distribution than flat benefits. As discussed in chapter 2.5 this is due to the fact that graduated benefits are higher for the poorest within the target group and vice versa. For program sizes of 15% and 20%, 61.9% and 57.0% respectively of all benefits reach the first consumption quintile in the case of graduated benefits, as compared to 58.5% and 53.3% respectively in the case of flat benefits. The adequacy of benefits for all simulated options is somewhat lower when using electricity expenses as a targeting mechanism.

Figure 4 shows total benefits as a share of post-transfer household consumption of beneficiary households in the first quintile. Comparing the existing situation - where the average share amounts to 39.6% - to the options with newly simulated benefits, the graph shows that new targeting methods considerably decrease this share. A flat benefit allocated through a PMT towards the poorest 10% of the population, leaves us with an average share of 12.2% in the post-transfer consumption of poor households. Keeping in mind that the budget is limited and the number of beneficiaries increases sharply in comparison to the existing situation, this drop is not surprising (See Table 6).

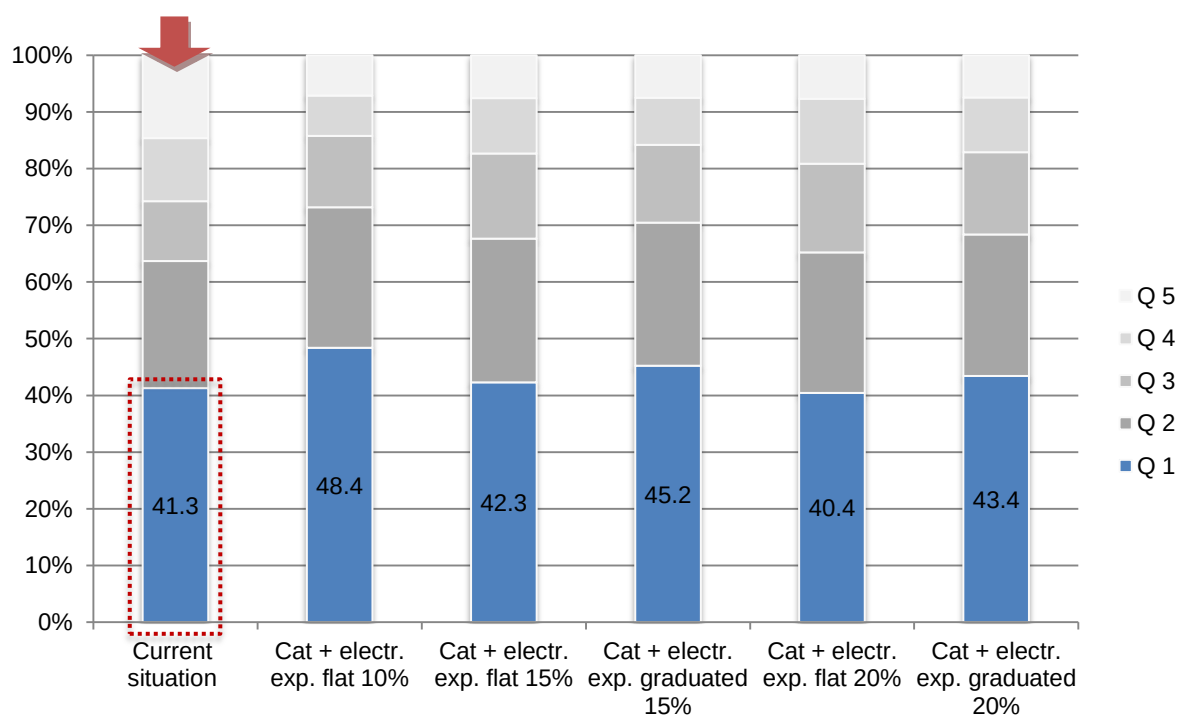
Shares are highest for the smallest program sizes. Considering that the total number of beneficiaries increases when the program size increases, benefit levels will decrease accordingly. When allocating benefits through a PMT, average shares of flat benefits in post-transfer household consumption range from 12.2% for a program size of 10% to 8.0% for a program size of 20%. Comparing equal program sizes for flat benefits and graduated benefits, the latter shows a relatively higher adequacy of benefits due to their more progressive distribution.

Figure 2. Distribution of total benefits allocated through PMT model in combination with categorical targeting (in %), different benefit options, by quintiles of pre-transfer consumption, scenario I, FBiH



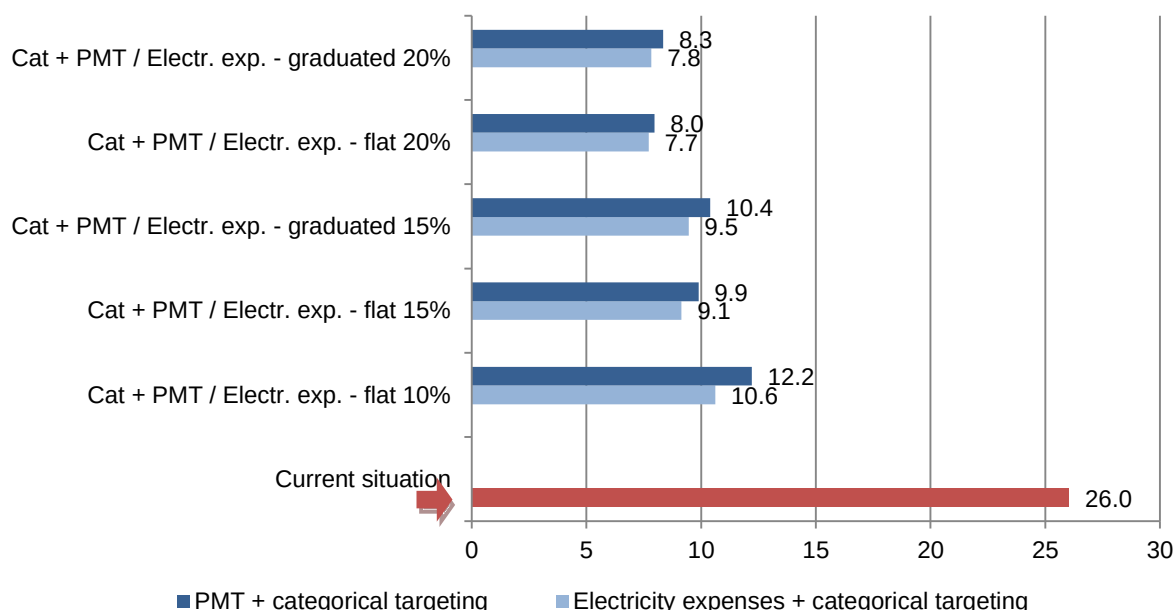
Source: Author's calculations based on HBS 2011. Note: Consumption quintiles are based on monthly per adult equivalent consumption (OECD 1 scale) before allocation of transfers that are to be replaced in scenario I.

Figure 3. Distribution of total benefits allocated through electricity expenditures model in combination with categorical targeting (in %), different benefit options, by quintiles of pre-transfer consumption, scenario I, FBiH



Source: Author's calculations based on HBS 2011. Note: Consumption quintiles are based on monthly per adult equivalent consumption (OECD 1 scale) before allocation of transfers that are to be replaced in scenario I.

Figure 4. Share of total benefits in the post-transfer consumption of beneficiary households, PMT and electricity expenditure model in combination with categorical targeting (in %), first consumption quintile, scenario I, FBiH



Source: Author's calculations based on HBS 2011. Note: Consumption quintiles are based on monthly per adult equivalent consumption (OECD 1 scale) before allocation of transfers that are to be replaced in scenario I.

Scenario II

Figure 5 and Figure 6 show the distribution of benefits by consumption quintiles, while Figure 7 shows the average shares of benefits in post-transfer consumption of beneficiary households for the first consumption quintile using a PMT and a hybrid model based on electricity expenses respectively for scenario II. The red arrows show the current situation.

The graphs illustrate that the current distribution of benefits can be greatly enhanced by using more efficient targeting methods. The simulations show that for this scenario the share of total benefits reaching the first consumption quintile can be increased from 39.6% to almost 76%. Again, this optimal result is reached in the case of allocating flat benefits through a PMT at the poorest 10% of the population.

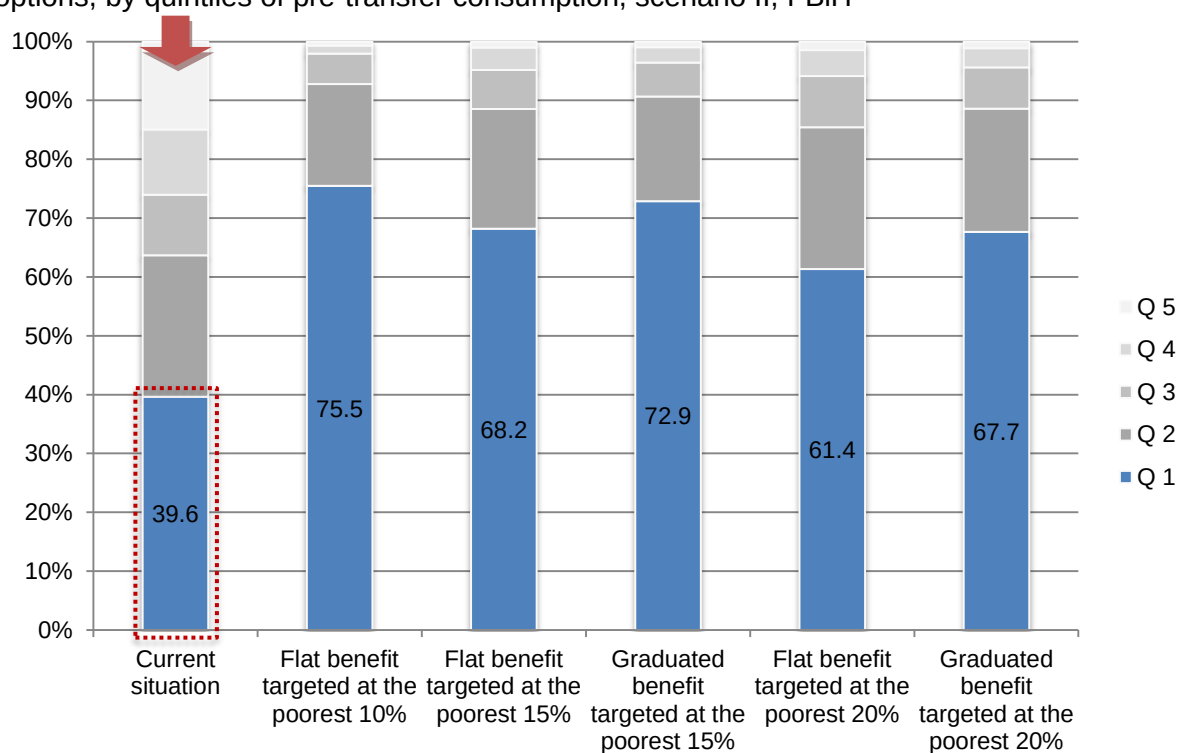
Other than the fact that the new distribution of benefits in this scenario shows a more extreme increase due to new targeting methods in comparison to the previous scenario, scenario II shows roughly the same patterns in the distribution of benefits as scenario I. Considering that the goal of the program should be poverty reduction, a PMT performs better than a model based on electricity expenditures, smaller program sizes perform better than larger program sizes and graduated benefits perform better than flat benefits. However, as opposed to scenario I, which simulates two rights-based programs in addition to a program targeting the poor, scenario II exclusively simulates a needs-based program aiming at poverty alleviation. This results in a stronger concentration of benefits within the first quintile. When using a PMT for targeting, the distribution of benefits within the first quintile ranges from 75.5 to 61.4% for flat benefits with program sizes from 10 to 20% and from 72.9 to 67.7% for graduated benefits with program sizes of 15 and 20%. These numbers are 8 to 10 percentage points lower in scenario I.

Figure 7 shows the average share of benefits in post-transfer consumption of beneficiary households in the first consumption quintile. As in the previous scenario, average shares

drop considerably from the existing situation (33.5%) to the simulated situation, where the average share lies between 14.4% to 7.4%. Again, this is a result of a limited budget to be spread over a much larger number of beneficiaries than currently is the case (See Table 6).

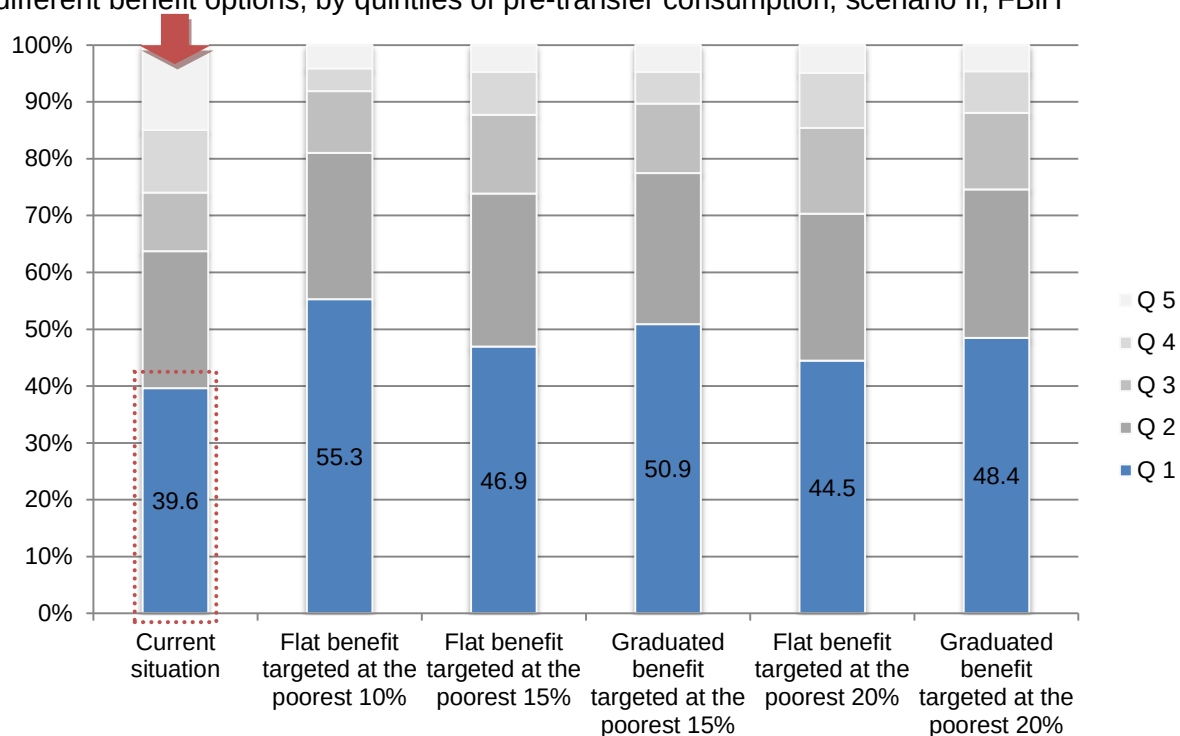
Further, the graph shows similar patterns that could be observed in scenario I. Generally, the average share of benefits in post-transfer consumption of beneficiary households is higher using a PMT for targeting as compared to a method based on electricity expenditures, for smaller program sizes as compared to larger program sizes, as well as for graduated benefits as compared to flat benefits. When targeting benefits using a PMT, the average share of benefits in post-transfer household consumption ranges from 14.4% for a program size of 10% with flat benefits to 7.4% for a program size of 20% with flat benefits.

Figure 5. Distribution of benefits allocated through the PMT model (in %), different benefit options, by quintiles of pre-transfer consumption, scenario II, FBiH



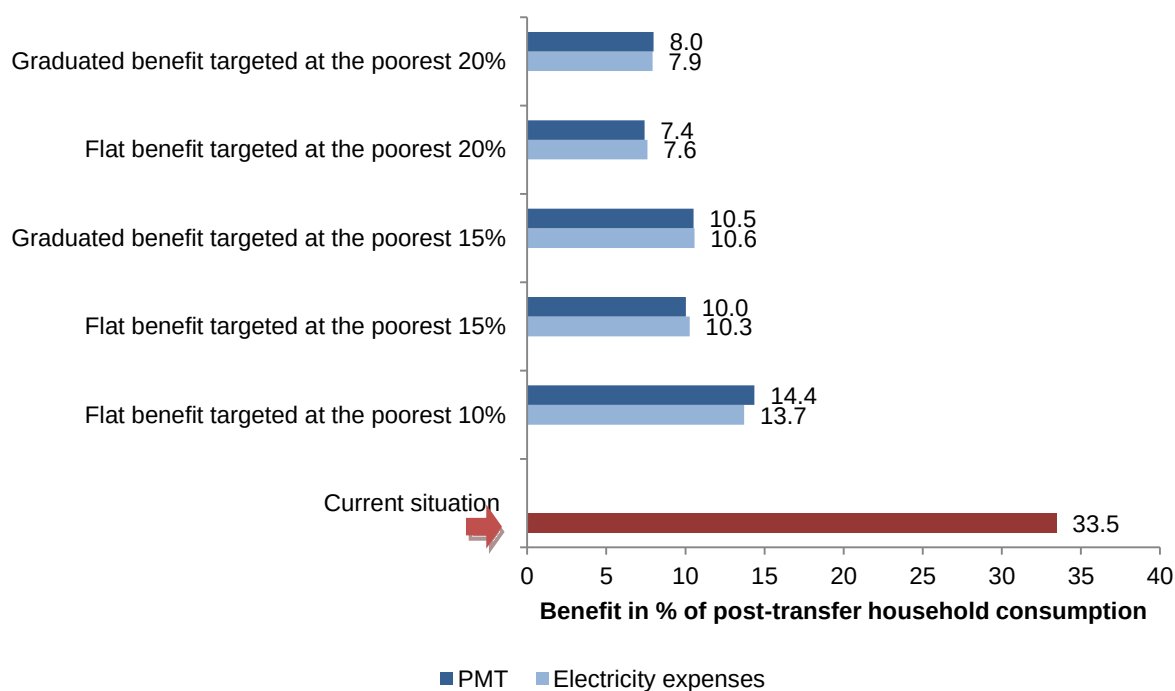
Source: Author's calculations based on HBS 2011. Note: Consumption quintiles are based on monthly per adult equivalent consumption (OECD 1 scale) before allocation of transfers that are to be replaced in scenario II.

Figure 6. Distribution of benefits allocated through electricity expenditures model (in %), different benefit options, by quintiles of pre-transfer consumption, scenario II, FBiH



Source: Author's calculations based on HBS 2011. Note: Consumption quintiles are based on monthly per adult equivalent consumption (OECD 1 scale) before allocation of transfers that are to be replaced in scenario II.

Figure 7. Share of benefits in the post-transfer consumption of beneficiary households, PMT model and electricity expenditure model, first consumption quintile, scenario II, FBiH

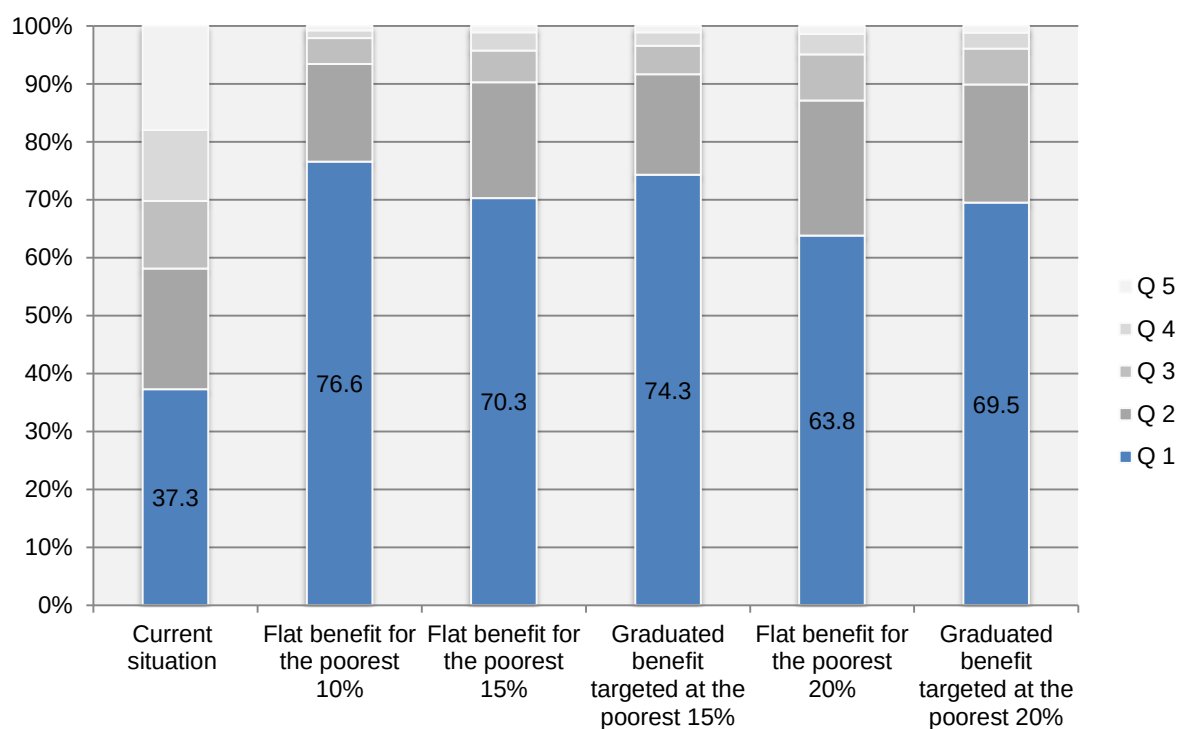


Source: Author's calculations based on HBS 2011. Note: Consumption quintiles are based on monthly per adult equivalent consumption (OECD 1 scale) before allocation of transfers that are to be replaced in scenario II.

Scenario III

Figure 8, Figure 9 and Figure 10 show the distribution of benefits over consumption quintiles, while Figure 11 shows the average share of benefits in post-transfer consumption of beneficiary households within the first consumption quintile for scenario III. The red arrows indicate the current situation. The figures display results using a PMT and a model based on electricity expenditures as well as a hybrid model combining a PMT with a filter.

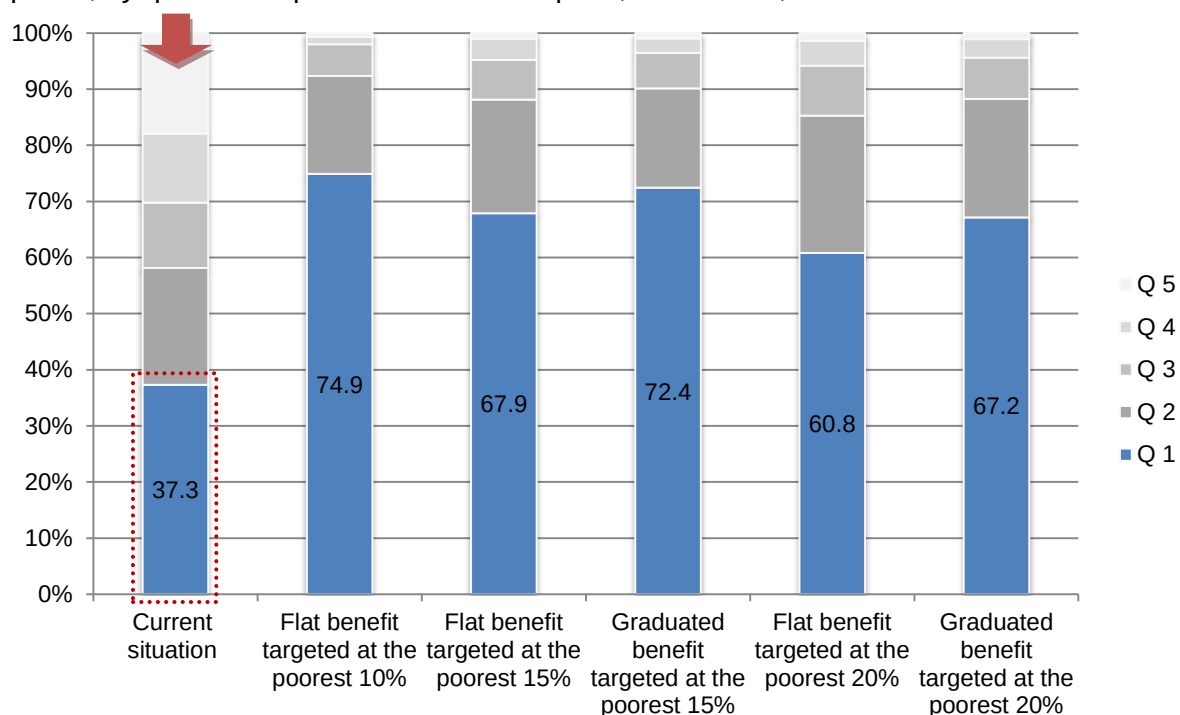
The reallocation of benefits in this scenario is most effective in terms of increasing the amount of resources shifted towards the poor. When targeting a flat benefit through a PMT at the poorest 10%, the share of resources reaching the poorest quintile is about double the share currently reaching the poorest quintile; whereas currently 37.3% of total benefits reach the poorest fifth of the population, simulations show that this share can be enhanced to a level of up to 74.9%. The newly tested targeting method in this scenario improves the distribution of benefits even further as compared to a simple PMT: adding a filter on top of a PMT increases the share of benefits channeled towards the poorest quintile to 76.6%.



Source: Author's calculations based on HBS 2011. Note: Consumption quintiles are based on monthly per adult equivalent consumption (OECD 1 scale) before allocation of transfers that are to be replaced in scenario III.

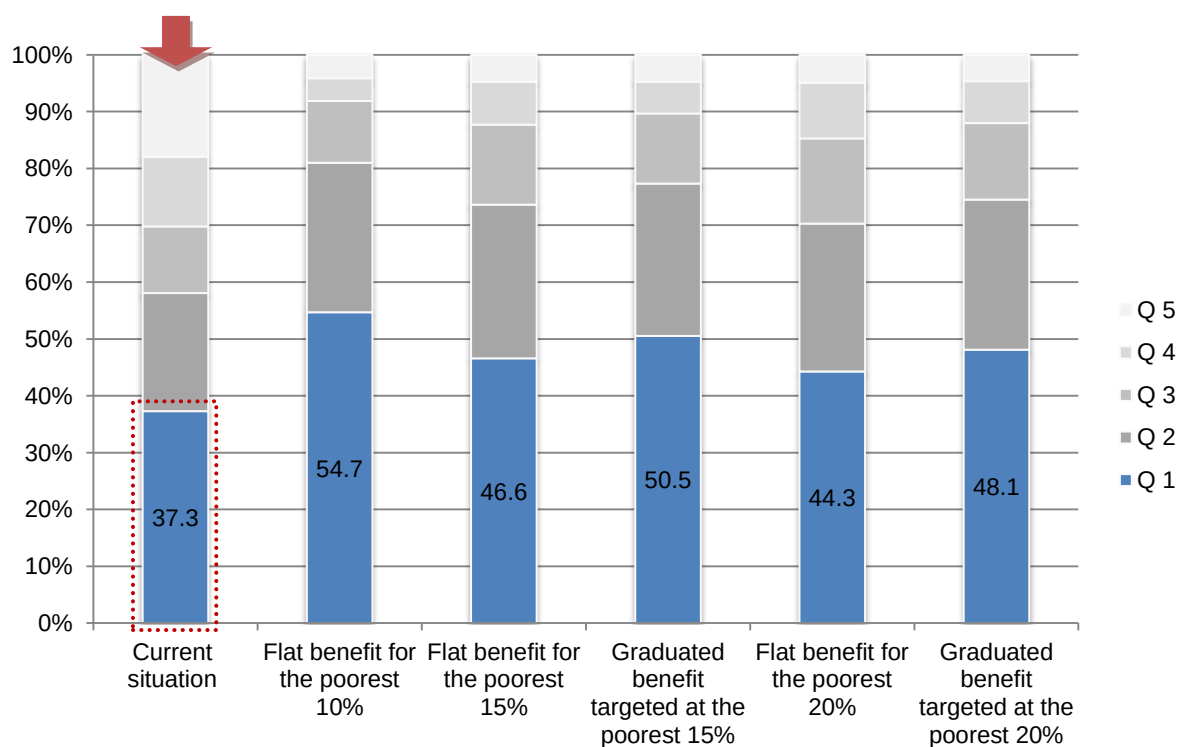
Figure 11 shows the average share of benefits in post-transfer consumption of beneficiary households in the first consumption quintile. As compared to the previous scenarios, the drop in average shares as compared to the current situation is smallest. In addition, average shares are higher than in scenario I and II, reaching levels of more than 20%. They are highest when applying a filter on top of the PMT due to the fact that a filter reduces the number of beneficiaries. The available budget can thus be spread over a smaller number of individuals, resulting in higher benefit levels (See Table 6). Best results are achieved when allocating a flat benefit to the poorest 10% of the population, resulting in a share of 24.7% as compared to 27.0% in the current situation.

Figure 8. Distribution of benefits allocated through the PMT model (in %), different benefit options, by quintiles of pre-transfer consumption, scenario III, FBiH



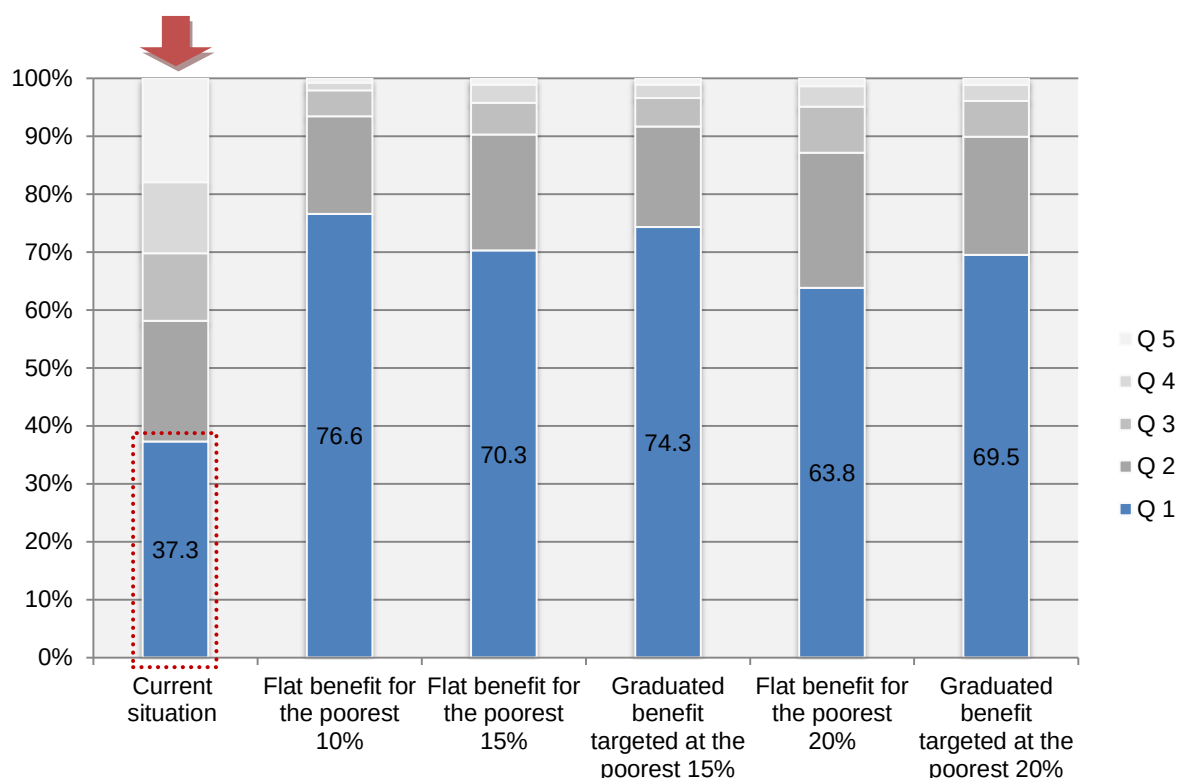
Source: Author's calculations based on HBS 2011. Note: Consumption quintiles are based on monthly per adult equivalent consumption (OECD 1 scale) before allocation of transfers that are to be replaced in scenario III.

Figure 9. Distribution of benefits allocated through electricity expenditures model (in %), different benefit options, by quintiles of pre-transfer consumption, scenario III, FBiH



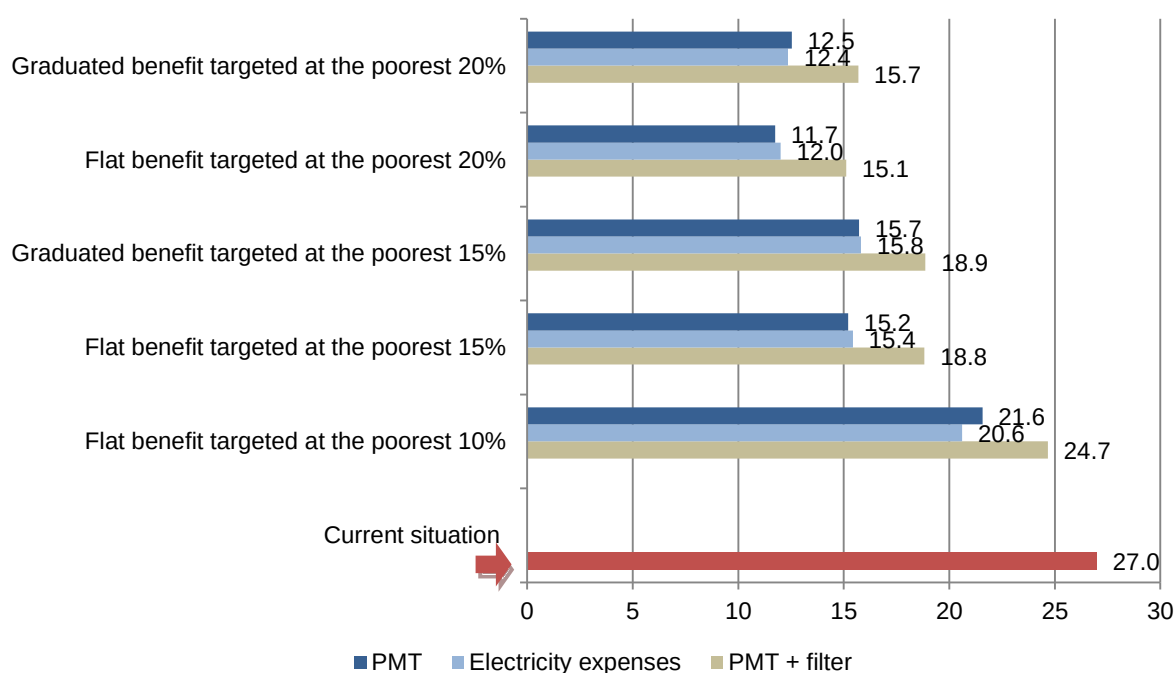
Source: Author's calculations based on HBS 2011. Note: Consumption quintiles are based on monthly per adult equivalent consumption (OECD 1 scale) before allocation of transfers that are to be replaced in scenario III.

Figure 10. Distribution of benefits allocated through a PMT + filter (in %), different benefit options, by quintiles of pre-transfer consumption, scenario III, FBiH



Source: Author's calculations based on HBS 2011. Note: Consumption quintiles are based on monthly per adult equivalent consumption (OECD 1 scale) before allocation of transfers that are to be replaced in scenario III.

Figure 11. Share of benefits in the post-transfer consumption of beneficiary households (in %), PMT model, electricity expenditure model and a PMT + filter, first consumption quintile, scenario III, FBiH



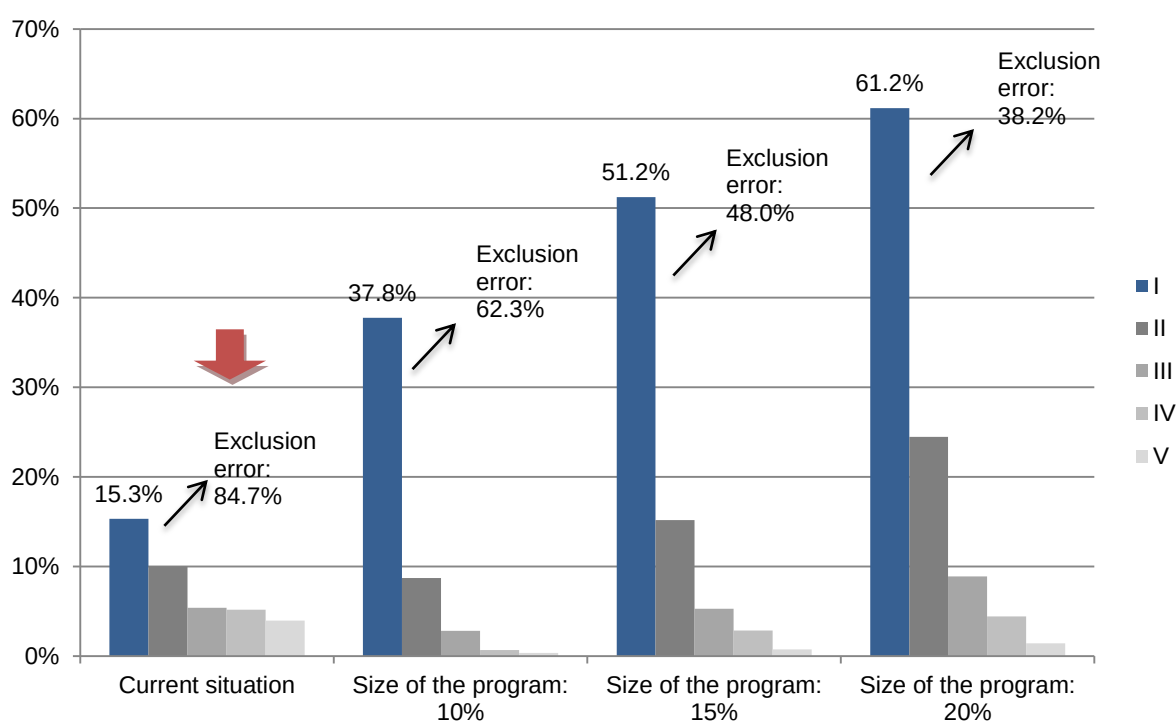
Source: Author's calculations based on HBS 2011. Note: Consumption quintiles are based on monthly per adult equivalent consumption (OECD 1 scale) before allocation of transfers that are to be replaced in scenario III.

3.4 Coverage and distribution of beneficiaries

Figure 12 – Figure 14 show the coverage of beneficiaries for different targeting methods in scenario III. For each targeting method, coverage in the current situation is shown, as well as for different program sizes in our simulations. Note that for scenario II and III coverage and distribution patterns are similar although they involve replacing slightly different sets of benefits. The figures below show that 15.3% of individuals in the first consumption quintile are receiving a benefit in the current situation, and thus are “covered” by benefits replaced in scenario III.

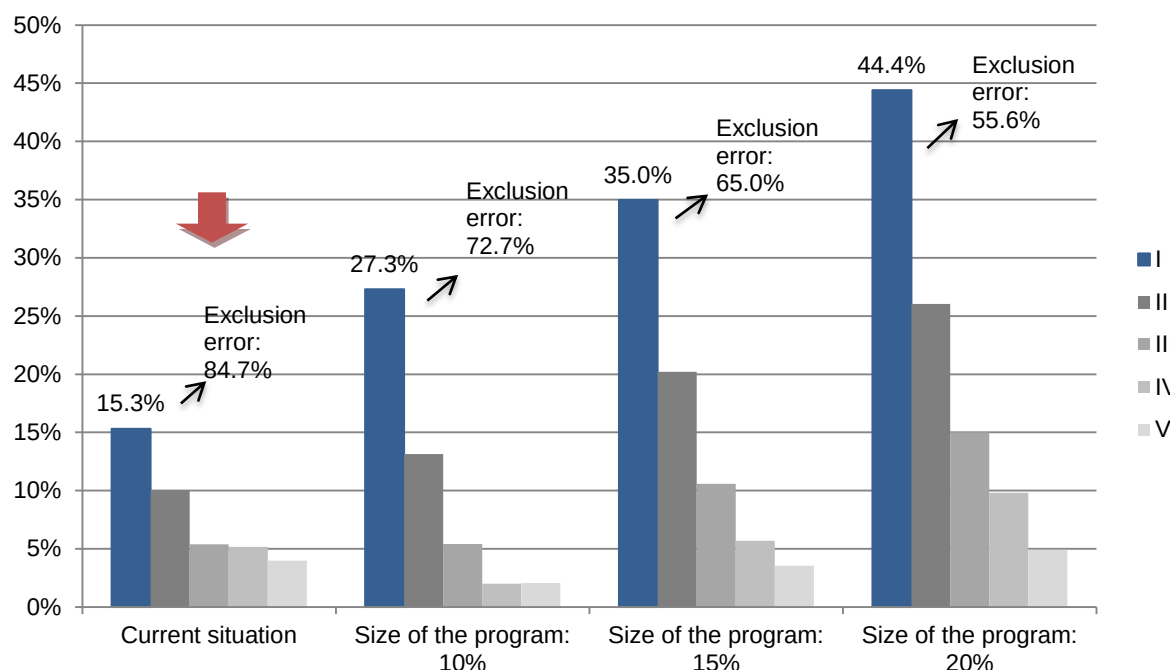
The figures show that all targeting methods have the potential to increase coverage considerably as compared to the current situation, especially for beneficiaries in the first quintile. This is even the case for small program sizes. The generosity of a program is directly linked to coverage: Larger program sizes increase coverage of the first quintile and thus decrease exclusion error more significantly than smaller program sizes. When comparing across targeting methods the PMT shows the most desirable results. It has the potential of increasing coverage of the first quintile from only 15.3% in the current situation to more than 60% after substituting benefits included for simulation in scenario III by a program targeted towards poor households.

Figure 12. Coverage of beneficiaries, PMT model, different program sizes, by quintiles of pre-transfer consumption, scenario III



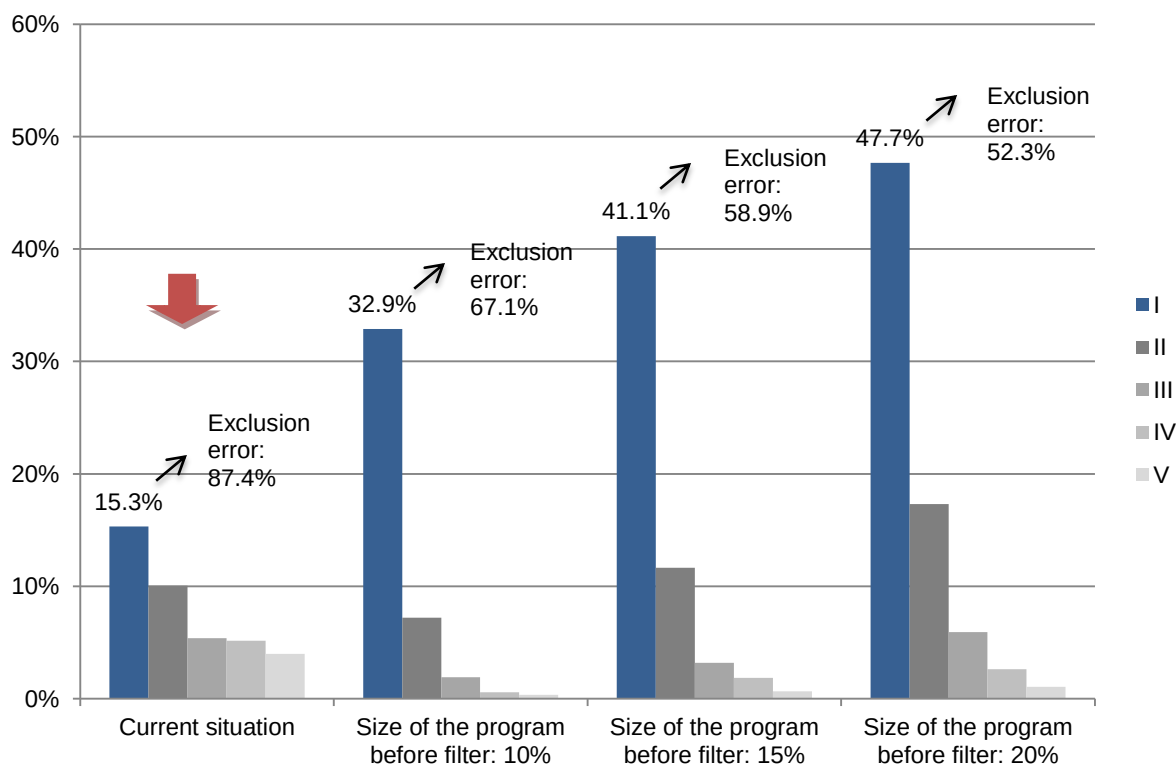
Source: Author's calculations based on HBS 2011. Note: Consumption quintiles are based on monthly per adult equivalent consumption (OECD 1 scale) before allocation of transfers that are to be replaced in scenario III.

Figure 13. Coverage of beneficiaries, electricity expenditures model, different program sizes, by quintiles of pre-transfer consumption, scenario III



Source: Author's calculations based on HBS 2011. Note: Consumption quintiles are based on monthly per adult equivalent consumption (OECD 1 scale) before allocation of transfers that are to be replaced in scenario III.

Figure 14. Coverage of beneficiaries, hybrid model (PMT + filter), different program sizes, by quintiles of pre-transfer consumption, scenario III



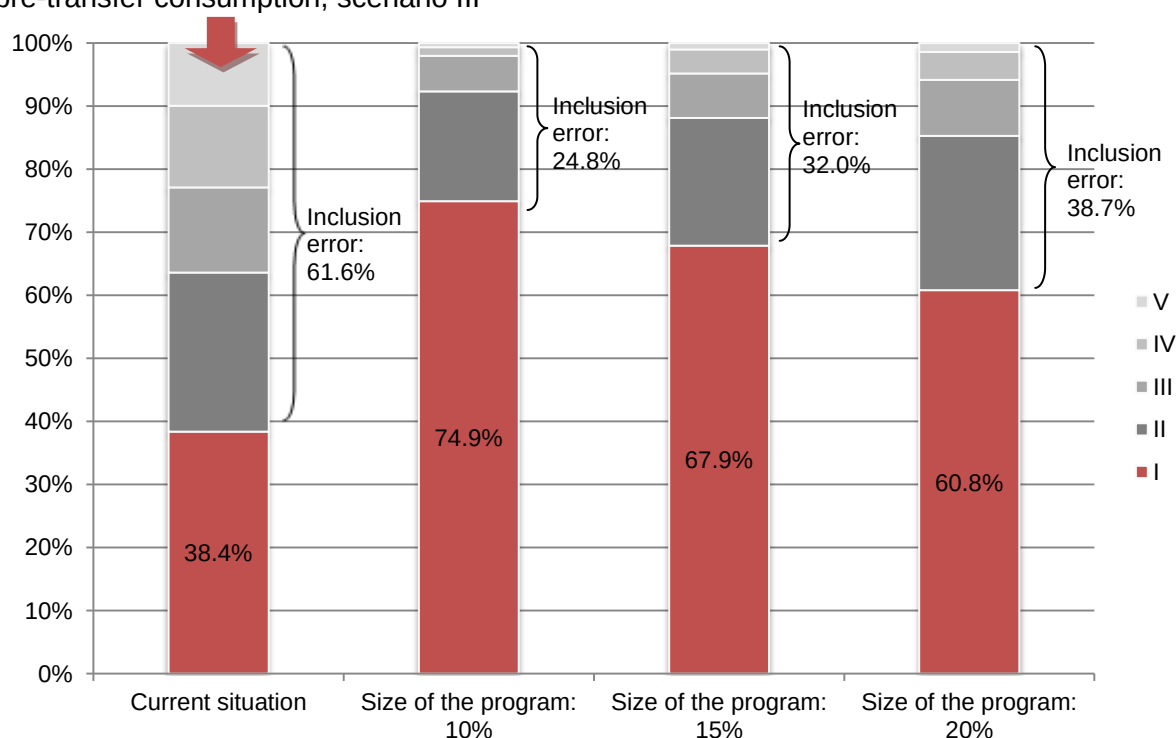
Source: Author's calculations based on HBS 2011. Note: Consumption quintiles are based on monthly per adult equivalent consumption (OECD 1 scale) before allocation of transfers that are to be replaced in scenario III.

Figure 15 - Figure 17 show the distribution of beneficiaries across consumption quintiles for different targeting methods. Within each targeting method they show the current situation and the result of targeting different program sizes: the poorest 10, 15 and 20% of the population.

The figures show that the distribution of beneficiaries can shift considerably more towards the first consumption quintile using new targeting methods. A PMT, for instance, has the potential of increasing the share of beneficiaries situated in the first consumption quintile from 38.4% to 74.9%. Results are even better if a filter is applied on top of the PMT, increasing the share of beneficiaries in the poorest quintile to almost 77% for a program size of 10%.

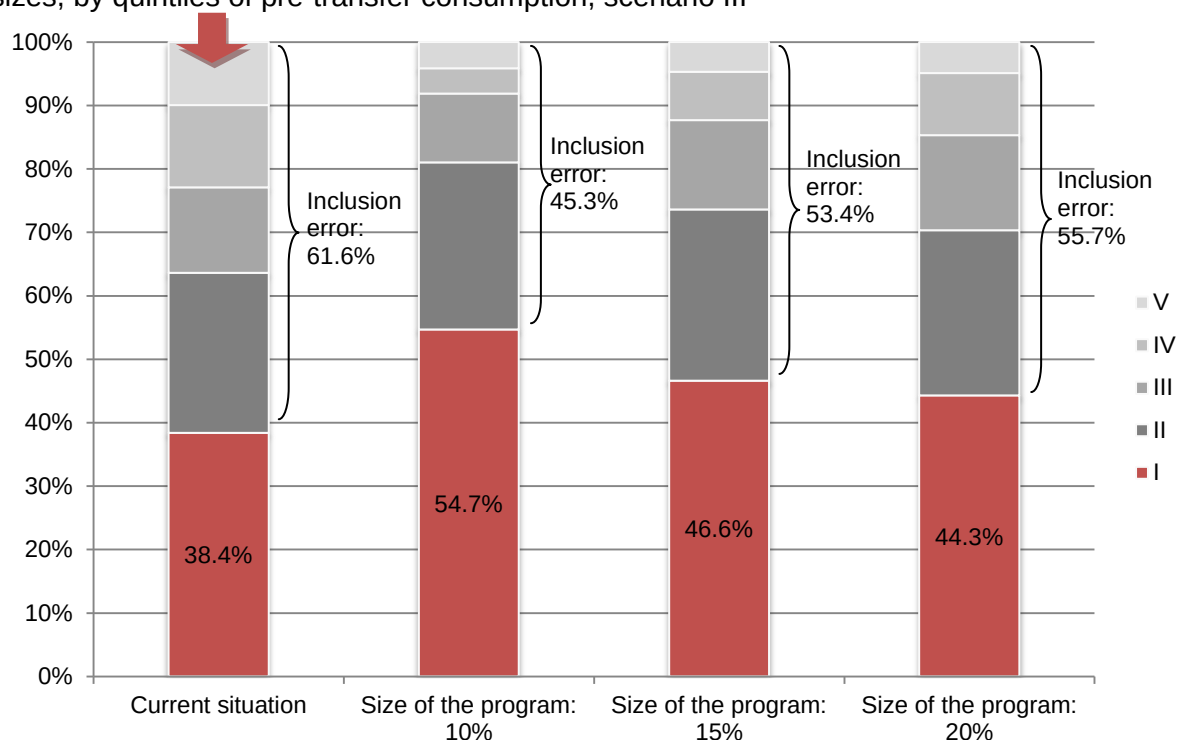
Smaller programs are more efficient in concentrating beneficiaries in the first consumption quintile. Although in absolute terms numbers of beneficiaries in the first consumption quintile will increase with larger program sizes (as illustrated by the coverage figures above), in relative terms they decrease due to leakage towards other quintiles. This is well-illustrated by the increasing inclusion error for more generous programs. Again taking the PMT as an example: For a program size of 10% the inclusion error amounts to 24.8%, whereas it increases to a share of 38.7% for a program size of 20%. Naturally, a filter reduces inclusion error by adding an additional eligibility criterion on top of the PMT: For the smallest program size inclusion error is reduced to 23.4% as compared to 24.8% for a 10% program size after applying a simple PMT.

Figure 15. Distribution of beneficiaries, PMT model, different program sizes, by quintiles of pre-transfer consumption, scenario III



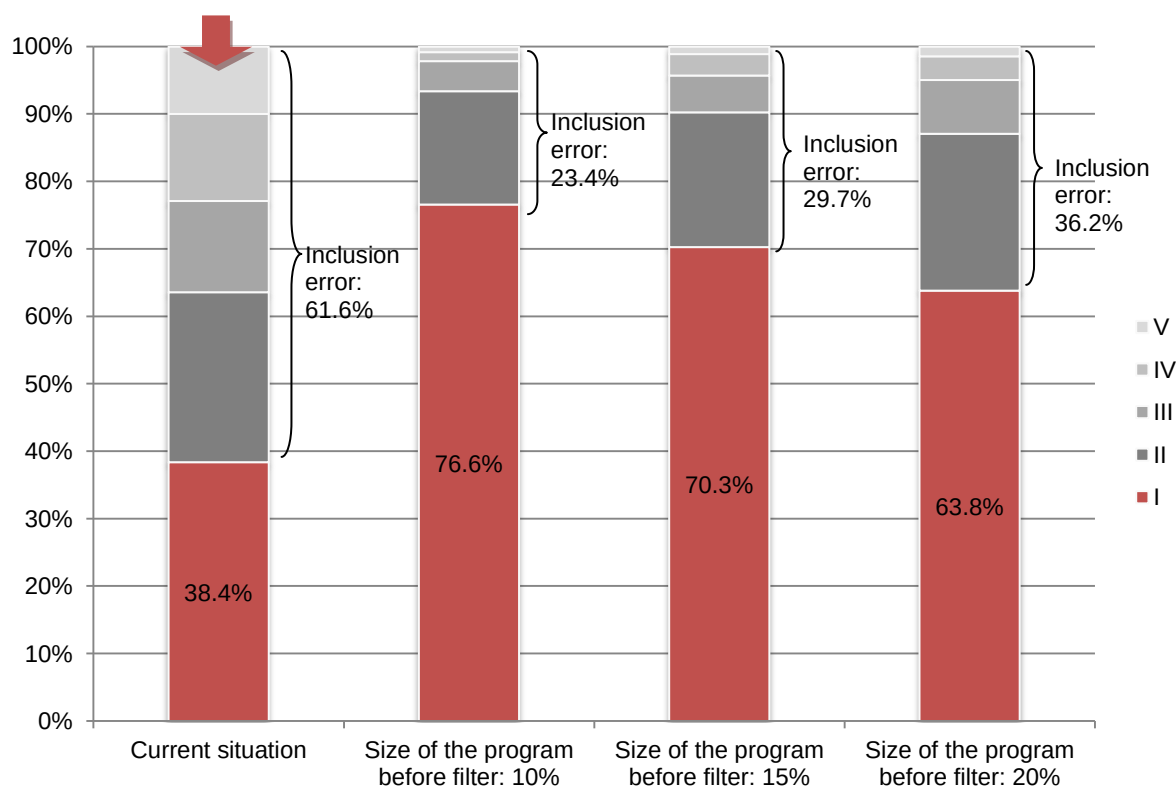
Source: Author's calculations based on HBS 2011. Note: Consumption quintiles are based on monthly per adult equivalent consumption (OECD 1 scale) before allocation of transfers that are to be replaced in scenario III.

Figure 16. Distribution of beneficiaries, electricity expenditures model, different program sizes, by quintiles of pre-transfer consumption, scenario III



Source: Author's calculations based on HBS 2011. Note: Consumption quintiles are based on monthly per adult equivalent consumption (OECD 1 scale) before allocation of transfers that are to be replaced in scenario III.

Figure 17. Distribution of beneficiaries, hybrid model (PMT + filter), different program sizes, by quintiles of pre-transfer consumption, scenario III



Source: Author's calculations based on HBS 2011. Note: Consumption quintiles are based on monthly per adult equivalent consumption (OECD 1 scale) before allocation of transfers that are to be replaced in scenario III.

3.5 Impact on poverty

The goal of simulating alternative targeting methods and different scenarios for budget allocation is to examine the adequacy of benefits allocated through new targeting methods. As described in the introduction of this chapter, most of our simulated programs are of a social assistance nature, with the aim of reducing hardship and poverty in BiH. In the previous paragraphs we have looked at a number of measures showing whether our new targeting methods allow us to improve the targeting of the poor. In this paragraph we look at the results of the new targeting methods in terms of poverty impacts: we evaluate the extent to which the new benefits allow households to exit poverty. To evaluate the poverty impact of the various options simulated, we employ two widely-used measures: the poverty rate and the poverty gap⁵.

The poverty rate, also known as poverty headcount ratio, indicates what part of the total population is poor (i.e. has a consumption level that is below the poverty line). In FBiH the persons with consumption of less than 350 BAM per adult equivalent⁶ per month are considered poor. However, the poverty rate only gives information on the number of poor people without an indication of the depth of their need. From a poverty reduction perspective, simply reducing the poverty rate is not enough. In addition, it is crucial to minimize the depth of poverty.

The poverty gap indicates the total amount of money necessary to lift all poor to the minimum consumption level. A smaller poverty gap suggests that the consumption of poor people is on average closer to the poverty line whereas a larger gap is a sign of greater depth of poverty. In the case of FBiH, the total amount of the poverty gap represents the budget necessary to allocate to the poor so that each person acquires a monthly level of consumption of 350 BAM per adult equivalent.

The current poverty gap in FBiH – based on the above-mentioned poverty line of 350 BAM – amounts to 36.6 million BAM. This means that in the status quo the total amount needed to ensure that nobody would be living below the poverty line anymore, i.e. to alleviate all existing poverty, amounts to 36.6 million BAM. Considering that in our simulations several transfers are ‘taken away’ and replaced by new transfers, the gap that has to be filled for each scenario is equal to the current gap of 36.6 million plus the amount of the transfers that are substituted. For instance, Figure 19 indicates that the pre-transfer poverty gap to be filled in scenario I amounts to 36.6 million BAM (the current gap) + 2.6 million BAM (the total amount of transfers that are substituted in scenario I). As the available budgets for scenario I-III are in all cases smaller than the respective total gap for each scenario, covering the gap is not feasible in either of them. Nevertheless, the third scenario can be expected to show better results in terms of decreasing the poverty gap due to its relatively larger budget.

Scenario I

When substituting some of the currently existing programs with a combination of a universal child allowance program, a disability benefit and a social assistance program targeted using PMT or a model based on electricity expenditures, we observe a positive but marginal impact on poverty (see Figure 18 - Figure 20 below).

Figure 18 shows what the impact on the poverty rate would be with target groups between 10 and 20% using different benefit options on reducing the pre-transfer poverty gap. It illustrates

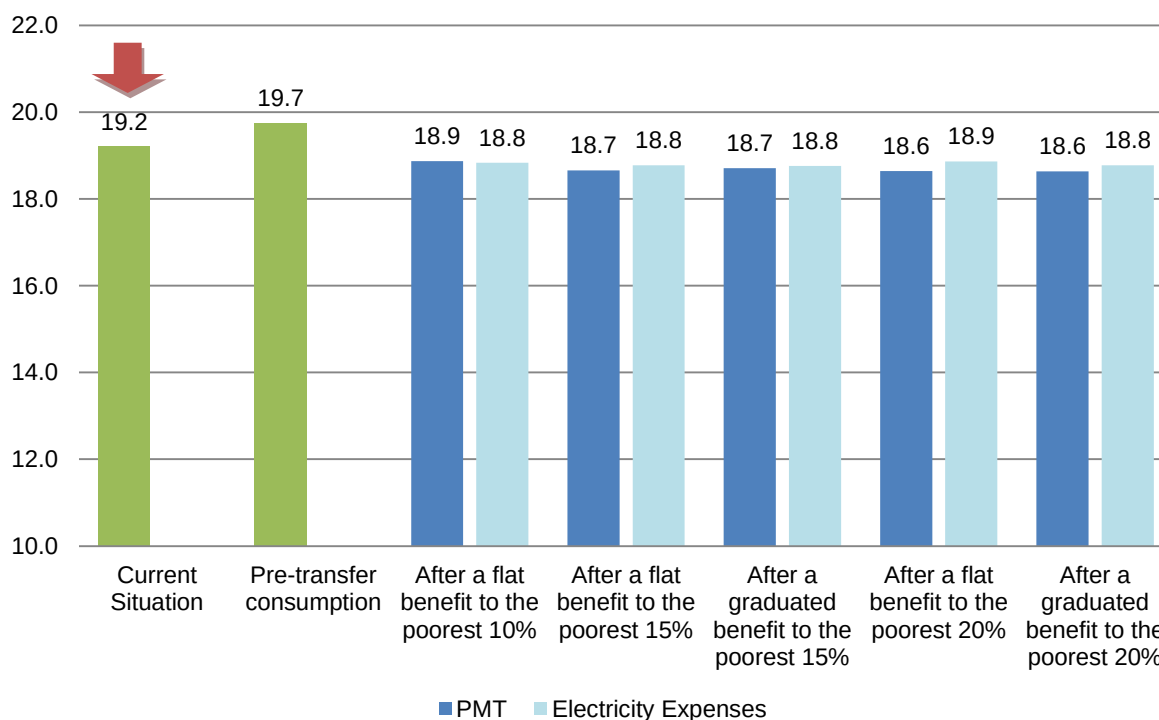
⁵ Please refer to the Annex for the formulae used for calculation of the poverty rate and poverty gap.

⁶ Please see section 2.6 for the methodology used to calculate the poverty line.

that the existing allocation of benefits only marginally decreases the level of poverty in FBiH. Red arrows indicate the current situation. The results of the simulated options indicate that when substituting the currently existing programs with a combination of three programs – a universal child benefit, universal disability benefit and a social assistance program targeted using the PMT model or the model based on electricity expenditures – the impact of the related budget in terms of poverty alleviation improves. Poverty rates drop with 1 percentage point, from nearly 20% to less than 19.0%. Despite the fact that this is an improvement from the current situation, a reduction of 1 percentage point is only marginal.

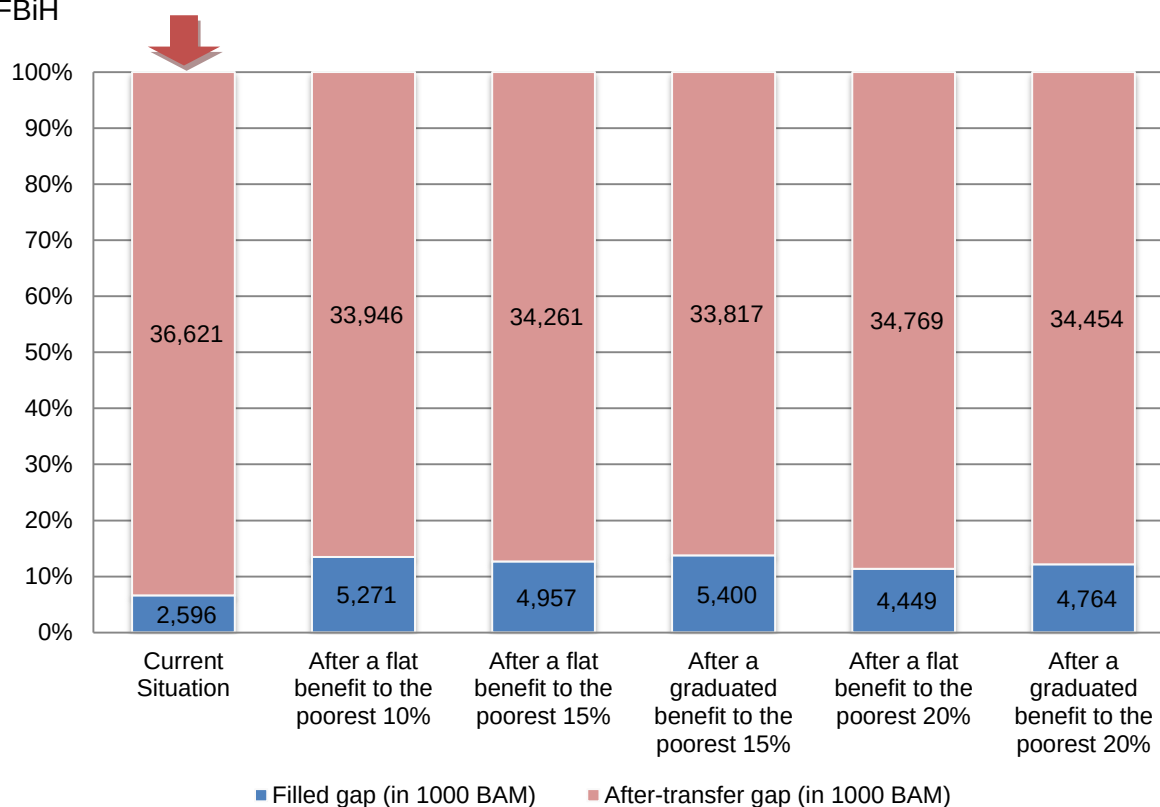
Figure 19 and Figure 20 display the impact of different benefit programs – using PMT or electricity expenditures model for targeting – on reducing the pre-transfer poverty gap. The graphs show what part of the gap would be filled by applying a certain benefit and what the remaining poverty gap would be after each option. The option including a social assistance program based on the PMT targeting method results in a larger decrease in the poverty gap than the alternative option based on electricity expenditures. What becomes visible from the figures is that the budget of 6.8 million BAM used in this scenario could cover a gap of up to 5.4 million, which is twice as much as the currently covered 2.6 million. Comparing the simulated options it becomes evident that allocating graduated benefits by brackets is more effective in reducing the poverty gap, which again is a result of the more progressive nature of graduated benefits. Also, when targeting the poorest 15% of the population, the results in terms of poverty gap reduction are better than when aiming to reach the poorest 20%. This is due to the fact that the inclusion error increases when targeting a larger group of the population, leading to a larger share of the budget leaking to non-poor households.

Figure 18. Poverty rates, selected program sizes and benefit types, PMT and electricity expenditure model, scenario I, FBiH



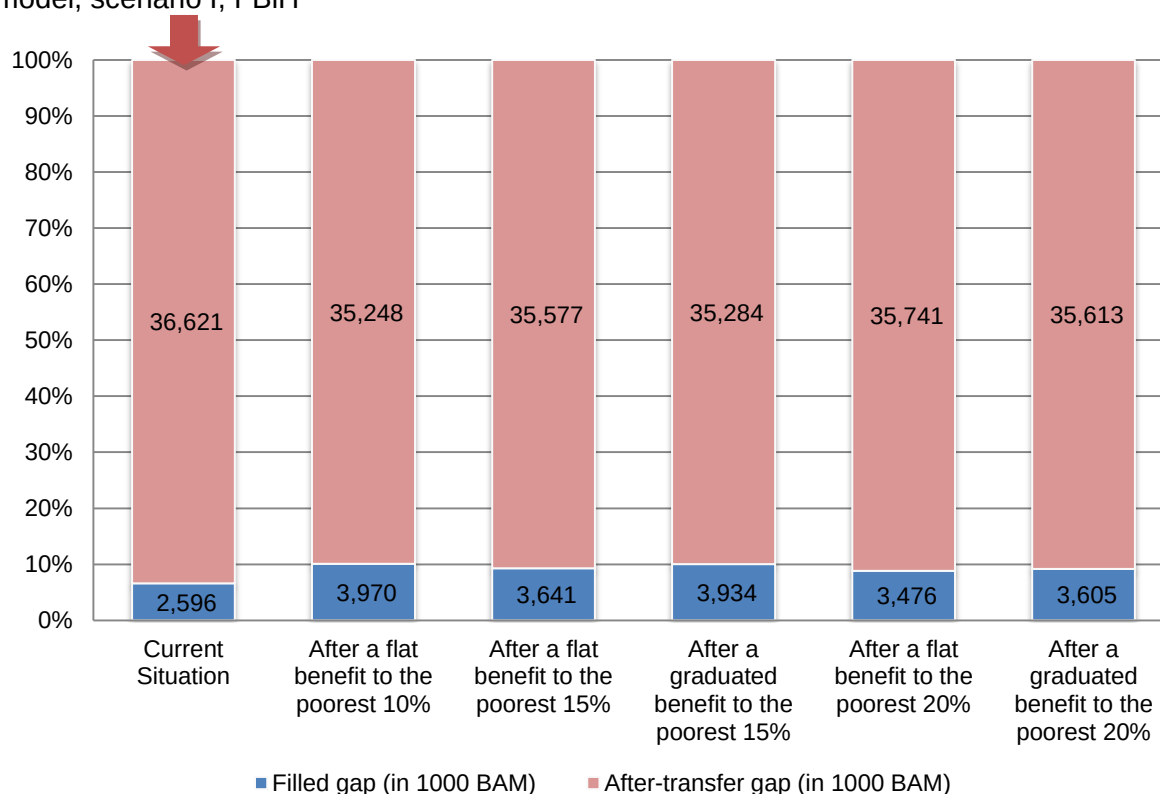
Source: Author's calculations based on HBS 2011.

Figure 19. Poverty gap, selected program sizes and benefit types, PMT model, scenario I, FBiH



Source: Author's calculations based on HBS 2011.

Figure 20. Poverty gap, selected program sizes and benefit types, electricity expenditure model, scenario I, FBiH



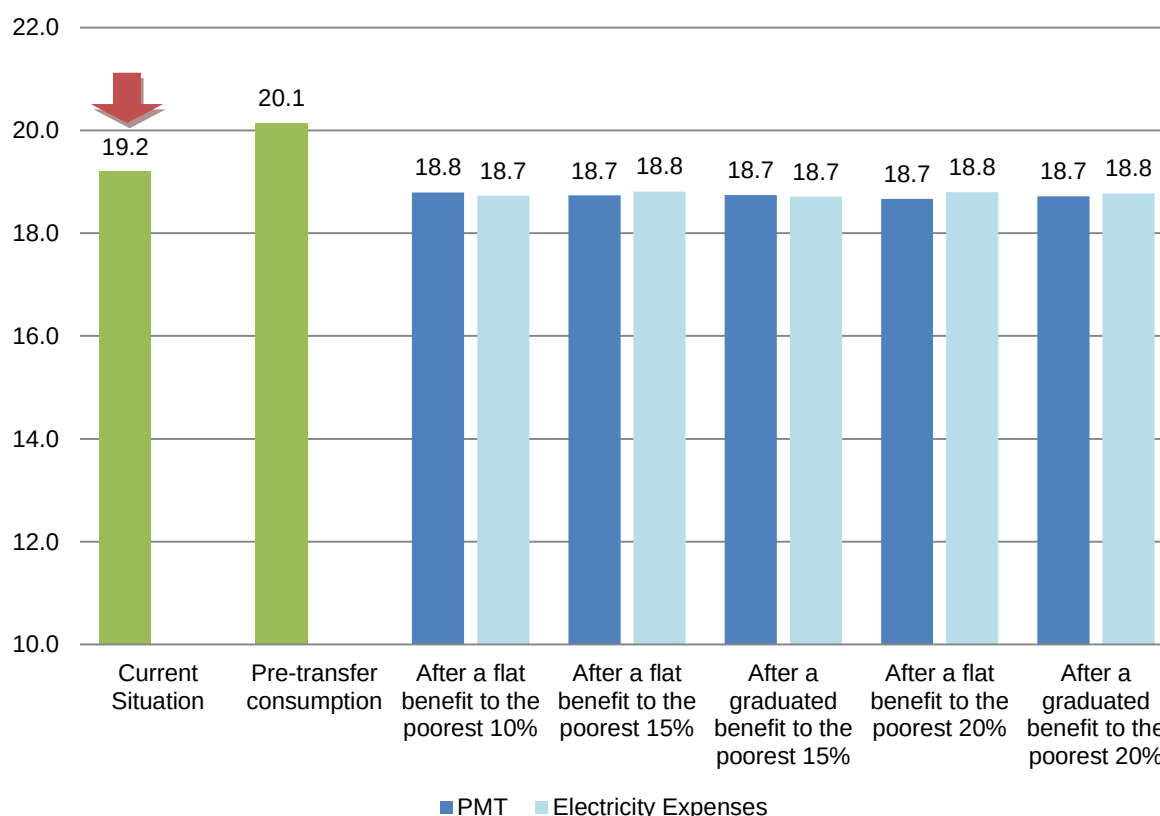
Source: Author's calculations based on HBS 2011.

Scenario II

Figure 21 to Figure 23 below show the effect on poverty of substituting some of the currently existing civilian benefits with a poverty alleviation program based on a PMT or on a targeting model based on electricity expenditures. Red arrows indicate the current situation.

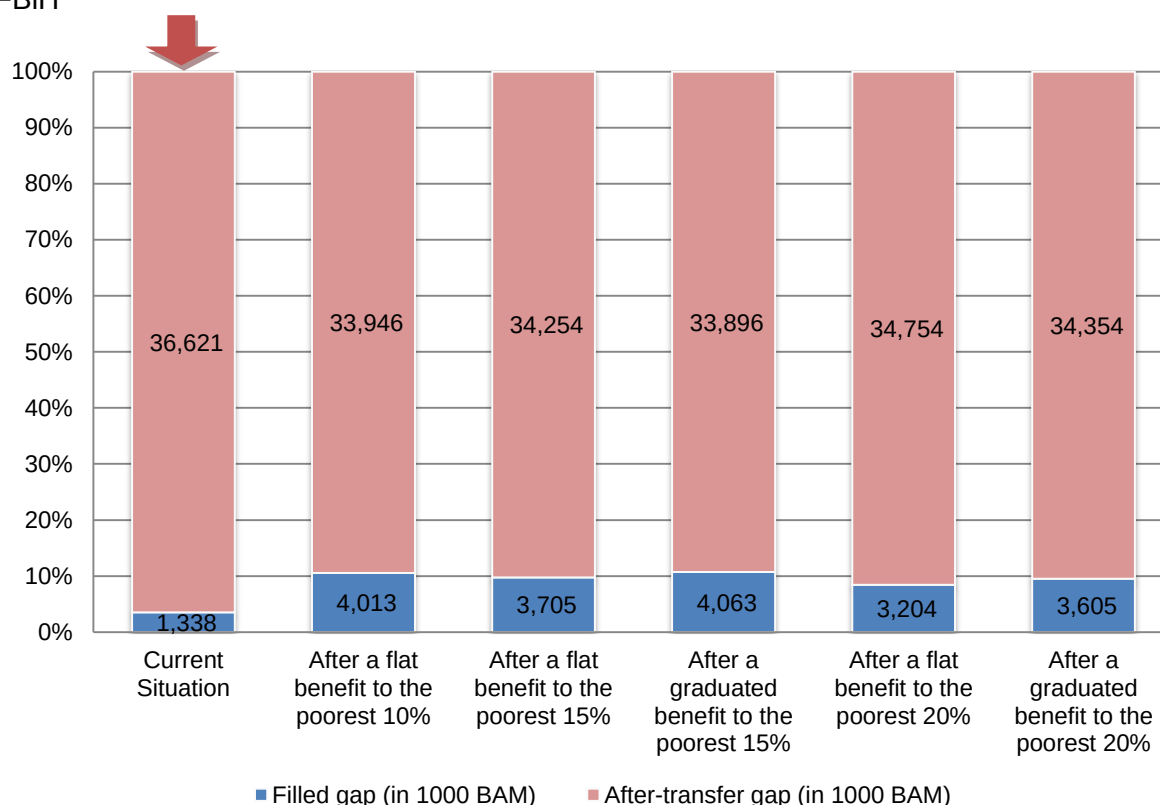
Since the programs substituted in this scenario are limited in their budget, the impact of replacing the currently existing benefits with an alternative program based on either PMT or targeting using electricity expenditures is very small, almost negligible. Shifting the budget to an alternative program would reduce poverty rates from 19.2% in the current situation to about 18.7 – 18.8% after new transfers (Figure 21). Moreover, considering that the simulations assume perfect implementation, it is likely that these results are overestimated. However, with regard to the poverty gap, the alternative programs simulated in scenario II reduce the depth of poverty more visibly than the currently existing schemes. With the same budget of 4.5 million BAM which in the current situation fills a 1.3 million BAM gap it would be possible to cover a gap of about 4 million. Nevertheless, the simulated budget amount for this scenario is insufficient to fill the existing gap - the share of the total poverty gap filled does not exceed 11% with any of the simulated options (Figure 22 and Figure 23).

Figure 21. Poverty rates, selected program sizes and benefit types, PMT and electricity expenditure model, scenario II, FBiH



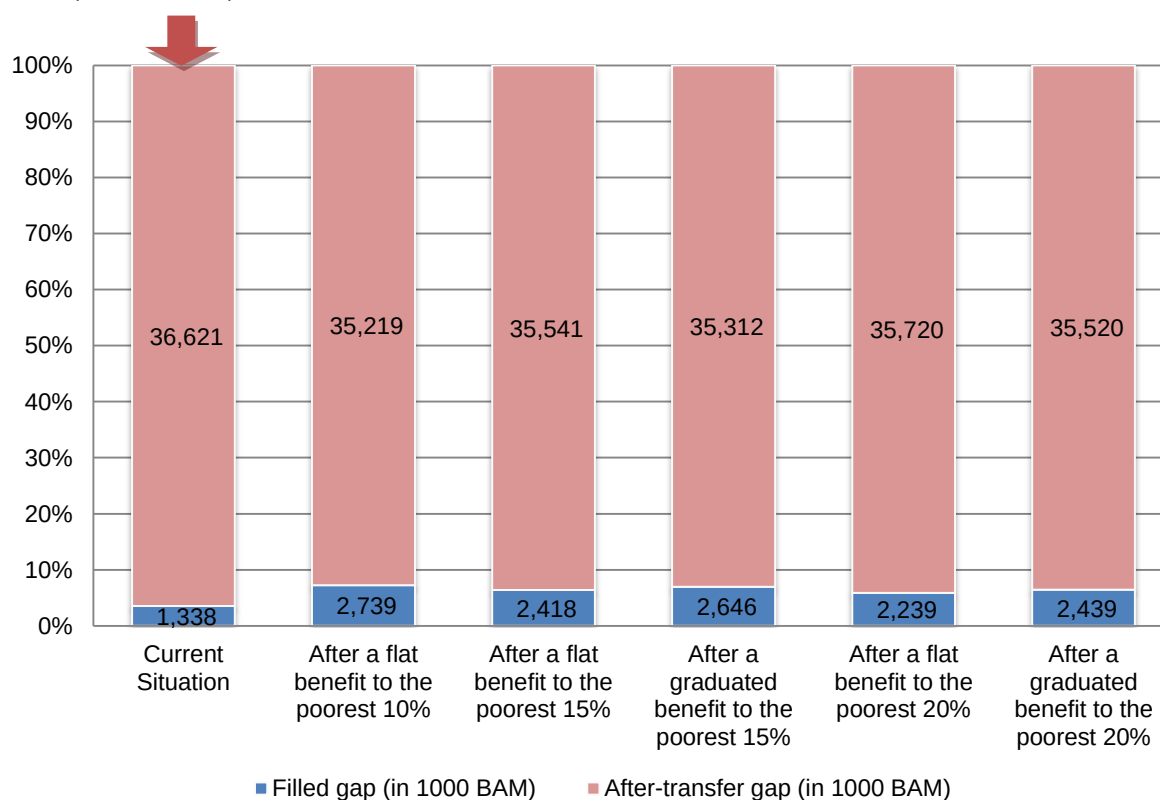
Source: Author's calculations based on HBS 2011.

Figure 22. Poverty gap, selected program sizes and benefit types, PMT model, scenario II, FBiH



Source: Author's calculations based on HBS 2011.

Figure 23. Poverty gap, selected program sizes and benefit types, electricity expenditure model, scenario II, FBiH



Source: Author's calculations based on HBS 2011.

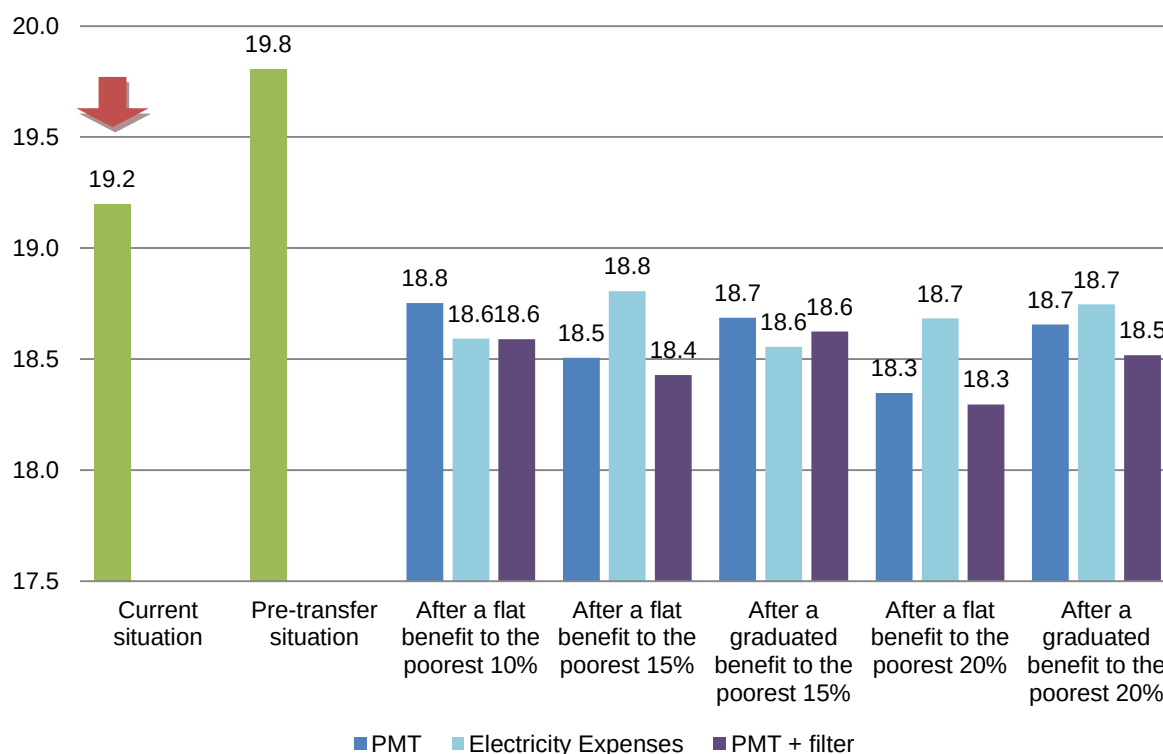
Scenario III

Figure 24 to Figure 27 below show the effect on poverty of substituting the currently existing civilian benefits with a poverty alleviation program based on a PMT, on a targeting model based on electricity expenditures or on a hybrid model combining a PMT and a filter. Red arrows indicate the current situation.

As the total budget of the existing civilian benefits reallocated in this scenario is larger than the total budget allocated in the two previous scenarios, the positive impact of our new targeting methods is largest in this scenario. The number of poor individuals in FBiH decreases most significantly: poverty rates drop almost 10 percentage points, from 19.2% to 18.3% in the case of allocating a flat benefit through a PMT (with our without filter) towards the poorest 20% of the population (see Figure 24). In addition, the filled poverty gap is largest in this scenario (over 7 million BAM) in contrast to the currently filled 2.9 million BAM (Figure 25 - Figure 27).

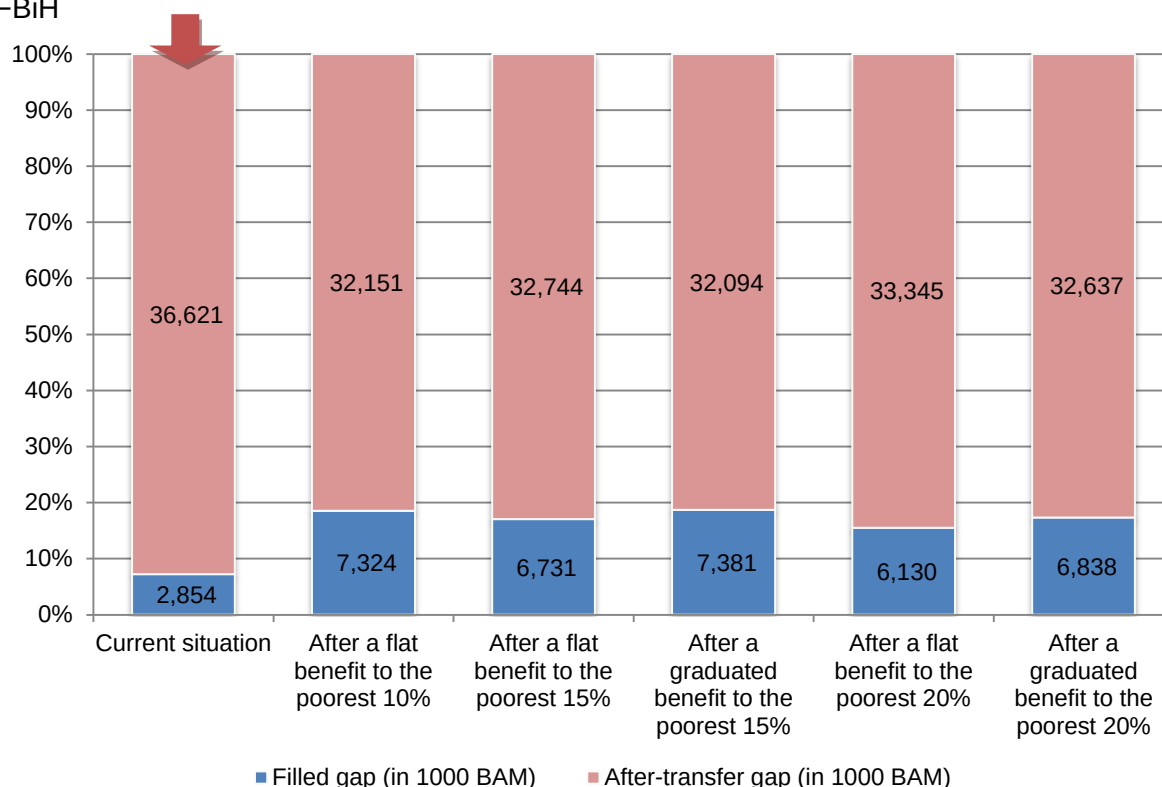
In addition to the PMT and the model based on electricity expenditures, scenario III includes a PMT model combined with a filter. In terms of reducing the poverty headcount, i.e. the number of individuals living below the poverty line, this model shows the best results. Also with regard to the poverty gap the PMT with filter has a stronger impact than the other targeting methods: it has the potential to fill 7.5 million BAM of the total gap, whereas for instance a simple PMT without filter can fill no more than approximately 7.3 million BAM of the total gap according to our simulations. Both methods reduce the poverty gap more significantly than the model based on electricity expenditures.

Figure 24. Poverty rates, selected program sizes and benefit types, PMT, electricity expenditure model and PMT + filter, scenario III, FBiH



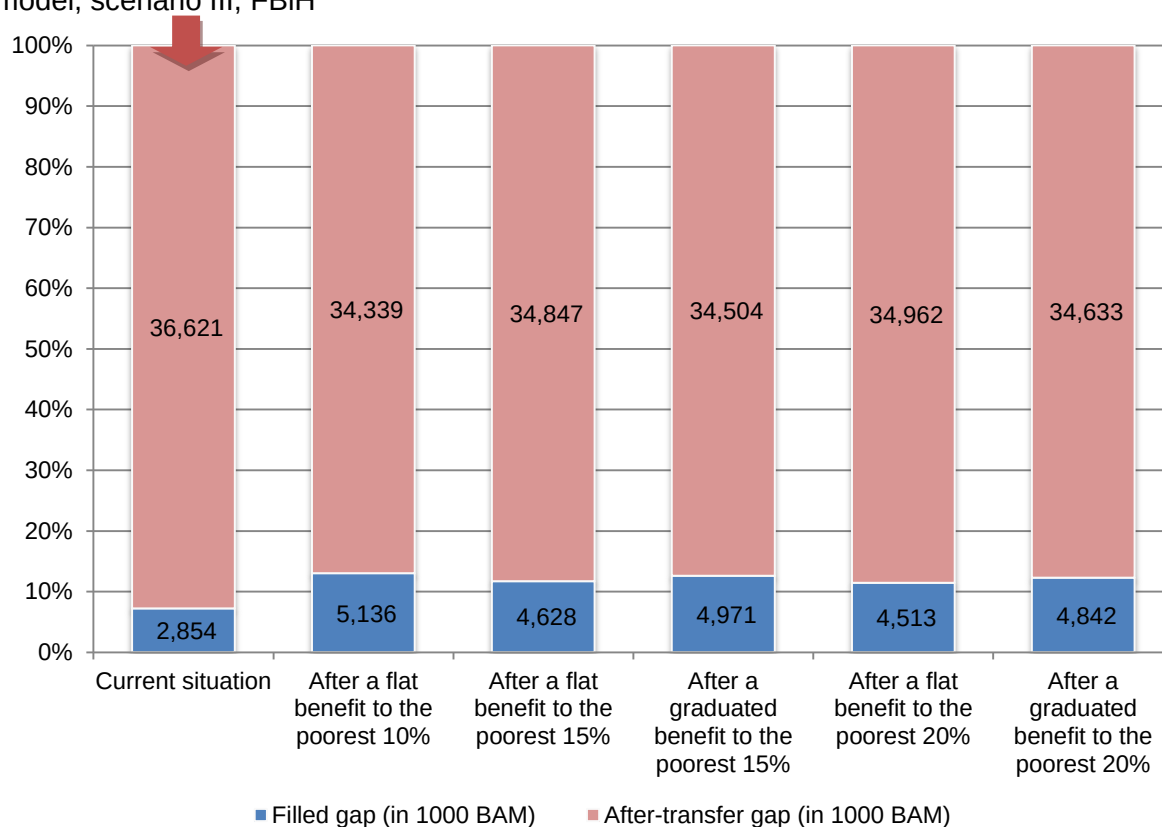
Source: Author's calculations based on HBS 2011.

Figure 25. Poverty gap, selected program sizes and benefit types, PMT model, scenario III, FBiH



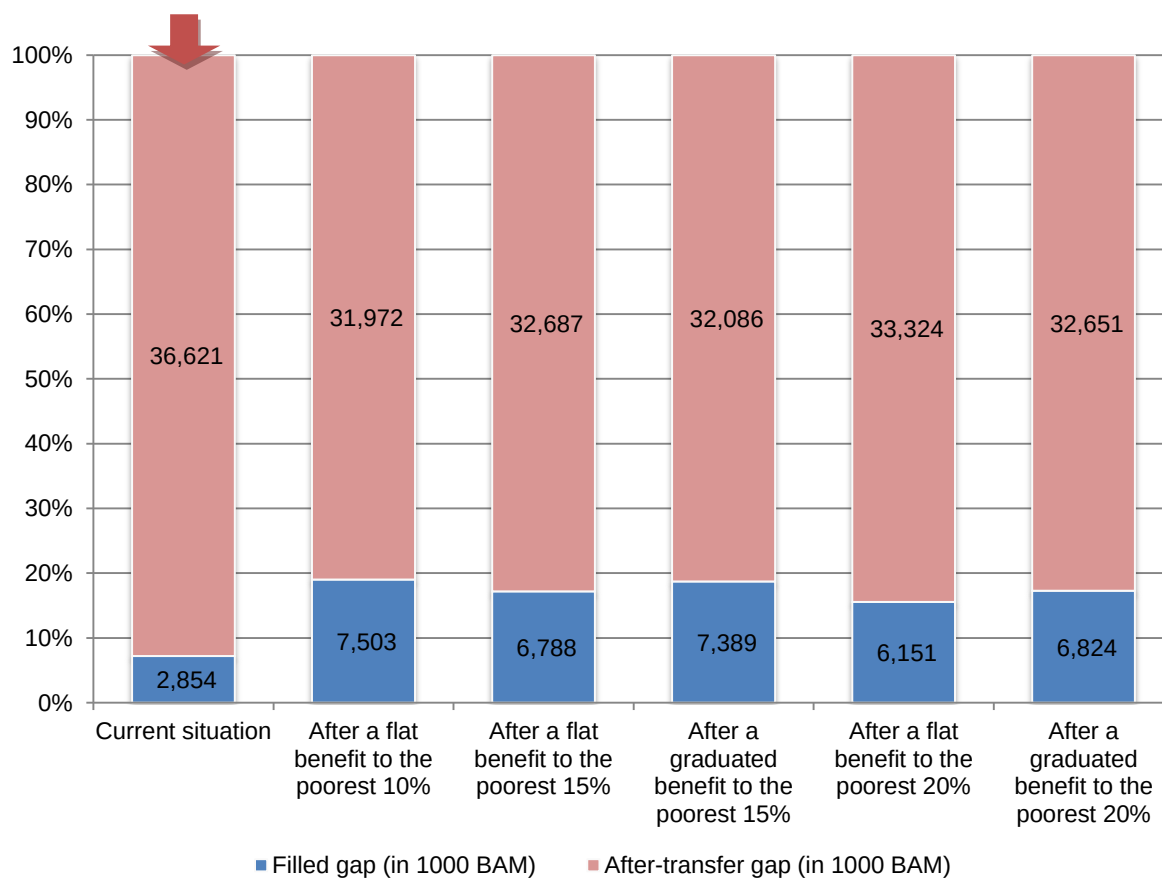
Source: Author's calculations based on HBS 2011.

Figure 26. Poverty gap, selected program sizes and benefit types, electricity expenditure model, scenario III, FBiH



Source: Author's calculations based on HBS 2011.

Figure 27. Poverty gap, selected program sizes and benefit types, hybrid model (PMT + filter), scenario III, FBiH



Source: Author's calculations based on HBS 2011.

3.6 Short overview of results

The following conclusions can be drawn from the above analysis.

Looking at the distribution of benefits we have seen that

- all simulated scenarios show the potential to achieve a more progressive distribution of benefits as compared to the current situation;
- investing a larger share of the overall budget in a needs-based program for poverty alleviation (social assistance) leads to a higher concentration of benefits within the first consumption quintile;
- a PMT is a more accurate mechanism in terms of channeling resources towards the poor than a targeting mechanism based on electricity expenditures;
- using a filter (whether a household has a garage or not) on top of the PMT to identify eligible households slightly improves the distribution of benefits towards the first consumption quintile as compared to a PMT without filter;
- smaller program sizes show less leakage of resources towards richer consumption quintiles than larger program sizes, regardless of the targeting mechanism or benefit design;
- graduated benefits result in a more progressive distribution of benefits than flat benefits, so that a larger share of the total budget is allocated to the poorest.

The average share of benefits in post-transfer household consumption

- decreases in all scenarios as compared to the current situation, due to an increase of the number of beneficiaries, which leads to a decrease in benefit levels;
- decreases least when using a PMT with a filter (garage) on top, due to the relatively low number of beneficiaries when using this targeting method;
- is highly influenced by the available budget;
- is higher for smaller program sizes as compared to larger program sizes;
- is higher for graduated benefits as compared to flat benefits.

With respect to the impact on poverty our simulations have shown that:

- all simulated scenarios show a positive impact on poverty alleviation and lead to a decrease in the depth of poverty;
- however, the size of the budget and the type of current benefits being replaced affect to a great extent the scope of the impact;
- the PMT targeting method leads to better results in reducing the poverty gap when compared to the method based on the electricity expenditures;
- a larger share of the poverty gap is filled when allocating graduated benefits, regardless of the scenario or the targeting method used;
- the results in terms of poverty gap reduction show that the simulated targeting methods, especially the PMT model with filter, would lead to a more efficient use of the social budget for poverty alleviation;

- the larger the budget to be reallocated, the more poverty can be reduced. The simulations in scenario III particularly suggest that the budget of 7.6 million BAM could be used to fill a gap of 7.5 million BAM in contrast to the 2.9 million BAM currently covered by the benefits that are replaced in this scenario.

Looking at coverage and distribution of beneficiaries we can see that

- new targeting methods have the potential to considerably increase coverage of beneficiaries in the first consumption quintile as compared to the current situation;
- a PMT with a filter shows the most desirable impact in terms of increasing distribution of beneficiaries in the first consumption quintile;
- coverage of beneficiaries in the first consumption increases when the program size increases due to a lower exclusion error. The opposite is the case for distribution of beneficiaries: the share of total beneficiaries in the first quintile decreases with increasing program sizes, due to a higher inclusion error.

4 Conclusions, policy recommendations

This study aims to find a way to improve targeting of the poor and to achieve a more just distribution of funds through simulating the impacts of a number of targeting mechanisms selected from the previous part of this report; *'New targeting methods for Bosnia and Herzegovina: Part I'*. In order to do so, three different scenarios were developed with different budget constraints depending on the benefits in the existing system that would be replaced. Within each scenario, different benefit designs were tested.

With the goal of the study being to find a method to achieve a more pro-poor distribution of funds as compared to the current situation, scenario III shows the most desirable results, particularly when allocating a flat benefit towards the poorest 10% of the population using a PMT with a filter – whether a household possesses a garage - on top. When doing so, the following is observed.

1. As a result of new targeting mechanisms the share of benefits reaching the first consumption quintile more than doubles. It increases from 37.3% to 76.6%. For the other scenarios the increase is smaller.
2. In spite of an increase in the number of beneficiaries (from 5.1% in current situation to 8.6% in the simulated option), the average share of benefits in post-transfer household consumption only reduces by 2.3 percentage points, from 27.0% to 24.7%. For all other scenarios this decrease is larger.
3. In terms of poverty impacts, the filled poverty gap increases from 2,854,000 BAM to 7,503,000 BAM.

Although these results can partly be attributed to new targeting methods, they are certainly also a result of the larger budget available for redistribution in this scenario. In addition, benefits of equal opportunity, which are not touched in other scenarios, are now being replaced by a poverty alleviation program targeted towards the poor. Naturally, this also causes a more visible shift of resources towards poor individuals.

Replacing benefits of equal opportunity by a poverty alleviation program might be viewed as inappropriate. Nevertheless, resources for redistribution towards poor households seem to be insufficient to really have an impact in scenario II, where these benefits are not included.

As veteran's benefits are politically loaded, it could be difficult to gain public acceptance to touch or replace them. Nevertheless, at the same time the personal disability benefit and survivor dependent benefit for military PWD's, constitute an important source of resources which could be shifted towards a poverty alleviation program, without touching benefits of equal opportunity for military PWD's. The impacts of doing this have also been evaluated and are included in the annex (scenario A1).

Targeting model and benefit design suggested for implementation

On the basis of our analysis, we suggest using a PMT in combination with flat benefits targeted at the poorest 10% of the population for implementation.

Implementing a PMT model is suggested for two different reasons. In the first place, our simulations indicate that a PMT model is more accurate than a model based on electricity expenditures: the distribution of benefits is more concentrated in the first quintile and exclusion and inclusion errors are smaller, irrespective of which scenario or benefit design we are looking at. Secondly, as a result of its accuracy, poverty impacts are larger when

using a PMT. Although combining a PMT with a filter would improve the performance of the model, the number of beneficiaries covered would decrease to a share of less than 10% of the total population. Taking into consideration that the current poverty level in FBiH amounts to 19.2%, a program size of less than 10% would be not be desirable.

The reason for opting for a flat benefit targeted at the poorest 10% is that it consistently showed the best results on the performance indicators tested. Firstly, our simulations suggest that it has the potential to achieve the strongest shift of resources towards the poorest quintile: using this benefit design, benefits are most concentrated among the poorest 20% of the population. Further, due to the fact that the increase in the number of beneficiaries is smaller than for program sizes of 15 and 20%, benefit levels and thus also the share of benefits in post-transfer household consumption is higher. In addition, with regard to coverage and distribution of beneficiaries a flat benefit targeted at the poorest 10% is able to achieve the most balanced outcome: although the exclusion error decreases considerably in comparison to the existing situation, the inclusion error remains at an acceptable level. Finally, poverty impacts are significant.

Considering the fact that the number of beneficiaries in all three proposed scenarios is higher than in the current situation, the benefit levels per beneficiary will be lower than is currently the case. Simply put, the available resources are spread over many more households and individuals. Of the different scenarios simulated, scenario three comes closest to existing adequacy levels.

In order to test the feasibility of the suggested targeting model and benefit design, in a next step an additional performance test will be carried out based on data collected from a pilot survey in 2013. The analysis, to be presented in two reports, will provide an insight on the winners and losers of the new targeting method, coverage and distribution based on these new data, as well as analysis of some budget implications.

Appendix

1. Additional scenario (A1) including veteran's benefits for simulation

The following benefits are included in the budget for scenario A1

- Budget: scenario II plus the amounts spent on the veteran's personal disability benefits and veteran's survivor dependent benefits (see Table A 8)
- Transfers replaced by: a single needs-based program targeting individuals in poor households, equal to scenario II.

Table A 1 shows the benefit levels based on this budget, while Table A2 shows the benefit levels for different benefit options.

Table A 1. FBiH Budget (2011): Scenario A1

Category of benefit	Total Budget Monthly
Cash and material benefits total	
Permanent financial assistance	1,095,876
Civilian (Non-war) Disabilities	
Personal Disability Benefits	2,184,219
Civilian Victims of War (CVW)	
Personal Disability benefit	693,781
Personal monthly allowance	61,778
Survivor dependent benefit	423,596
Disabled War Veterans	
Personal Disability benefit	5,034,952
Survivor dependent benefit	5,449,014
TOTAL Simulation budget for Scenario III	14,943,215

Source: Author's calculations based on HBS 2011.

Table A2. Benefit levels for different benefit options, in BAM, PMT model⁷, scenario A1

Targeting mechanism	Target group		Monthly benefit amount
	Total target group	Sub- targeting group (bracket)	Scenario A I
PMT			
Social Assistance			
<i>Flat Benefit</i>			
a. Flat benefit per individual	Poorest 10%	-	73
b. Flat benefit per individual	Poorest 15%	-	49
c. Flat benefit per individual	Poorest 20%	-	37
<i>Graduated Benefit</i>			
d. Graduated benefit per individual	Poorest 15%	Poorest 0-5%	73
		Poorest 5-10%	49
		Poorest 10-15%	24
e. Graduated benefit per individual	Poorest 20%	Poorest 0-10%	51
		Poorest 10-15%	29
		Poorest 15-20%	15

Source: Author's calculations based on HBS 2011.

⁷ Please note that the benefit amounts allocated to individuals when using the PMT model for targeting are similar to those when using the electricity expenditures model (see Annex).

Table A 3 and Table A 4 show the winners and losers from scenario A1 for benefit allocation using a PMT and a model based on electricity expenditures respectively. As for the other scenario's a PMT achieves a higher share of winners in the first quintile than a model based on electricity expenditures and more generous program sizes have the power to increase this share. Also, it should be noted that, in spite of replacing a number of veteran's benefits by a program targeted at poor households, the share of losers is small (around 7% of total population). Moreover, the losers belonging to the first quintile amount to between 1.6% and 2.3% of total population.

Table A 3. Winners and losers from the simulated reform (in % of total population), by quintiles of pre-transfer consumption, PMT model, scenario A1, FBiH

<i>PMT model</i>		<i>Q1</i>	<i>Q2</i>	<i>Q3</i>	<i>Q4</i>	<i>Q5</i>	<i>Total</i>
<i>Program Size</i>							
	<i>10%</i>						
Losers		2.3%	1.8%	1.5%	1.1%	0.9%	7.6%
Winners		6.4%	1.6%	0.7%	0.1%	0.0%	8.7%
Remain beneficiaries		1.1%	0.1%	0.0%	0.0%	0.0%	1.3%
	<i>15%</i>						
Losers		1.8%	1.7%	1.5%	1.1%	0.9%	6.9%
Winners		8.6%	2.7%	1.1%	0.6%	0.1%	13.1%
Remain beneficiaries		1.5%	0.3%	0.0%	0.0%	0.1%	1.9%
	<i>20%</i>						
Losers		1.6%	1.5%	1.4%	1.1%	0.8%	6.4%
Winners		10.4%	4.3%	1.8%	0.9%	0.2%	17.5%
Remain beneficiaries		1.7%	0.5%	0.1%	0.0%	0.1%	2.4%

Source: Author's calculations based on HBS 2011. *Note:* Consumption quintiles are based on monthly per adult equivalent consumption (OECD 1 scale) before allocation of transfers that are to be replaced in scenario A 1.

Table A 4. Winners and losers from the simulated reform (in % of total population), by quintiles of pre-transfer consumption, Electricity expenditures model, scenario A1, FBiH

<i>Electricity expenditure model</i>		<i>Q1</i>	<i>Q2</i>	<i>Q3</i>	<i>Q4</i>	<i>Q5</i>	<i>Total</i>
<i>Program Size</i>							
	<i>10%</i>						
Losers		2.6%	1.9%	1.4%	1.1%	0.9%	7.9%
Winners		4.6%	2.6%	1.1%	0.4%	0.3%	9.0%
Remain beneficiaries		0.7%	0.1%	0.0%	0.0%	0.1%	1.0%
	<i>15%</i>						
Losers		2.4%	1.7%	1.4%	1.1%	0.9%	7.5%
Winners		5.9%	3.8%	2.2%	1.1%	0.6%	13.6%
Remain beneficiaries		1.0%	0.3%	0.0%	0.0%	0.1%	1.4%
	<i>20%</i>						
Losers		2.2%	1.5%	1.3%	1.0%	0.8%	6.8%
Winners		7.6%	4.7%	3.0%	1.9%	0.8%	18.0%
Remain beneficiaries		1.2%	0.5%	0.2%	0.1%	0.1%	2.0%

Source: Author's calculations based on HBS 2011. *Note:* Consumption quintiles are based on monthly per adult equivalent consumption (OECD 1 scale) before allocation of transfers that are to be replaced in scenario A 1.

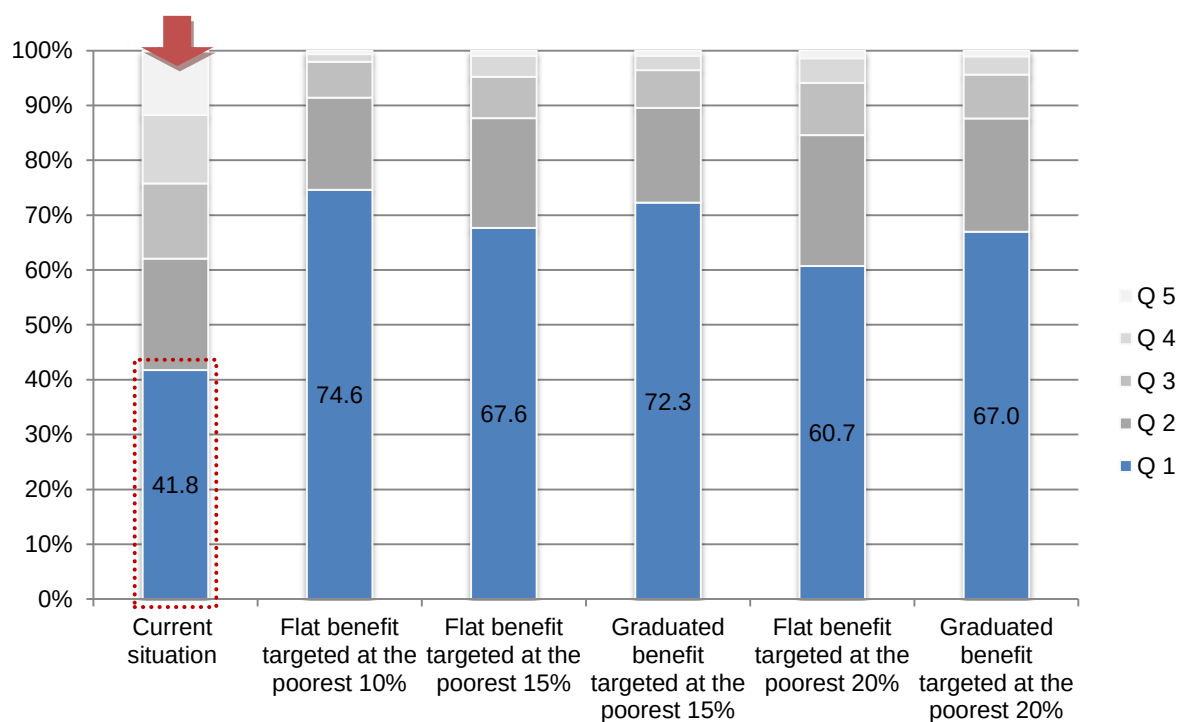
Distribution and adequacy of benefits

Figure A 1 – Figure A 3 show the distribution of benefits as well as the average share of benefits in post-transfer household consumption. The red arrows designate the current situation.

The figures show that alternative targeting methods have the potential to considerably improve the distribution of benefits in comparison to the current situation. Similar to all previous scenarios, the best results are achieved when allocating a flat benefit through a PMT to the poorest 10% of the population. Still, the overall increase in the share of benefits channeled to the first consumption quintile is larger in scenario III, where benefits of equal opportunity were reallocated.

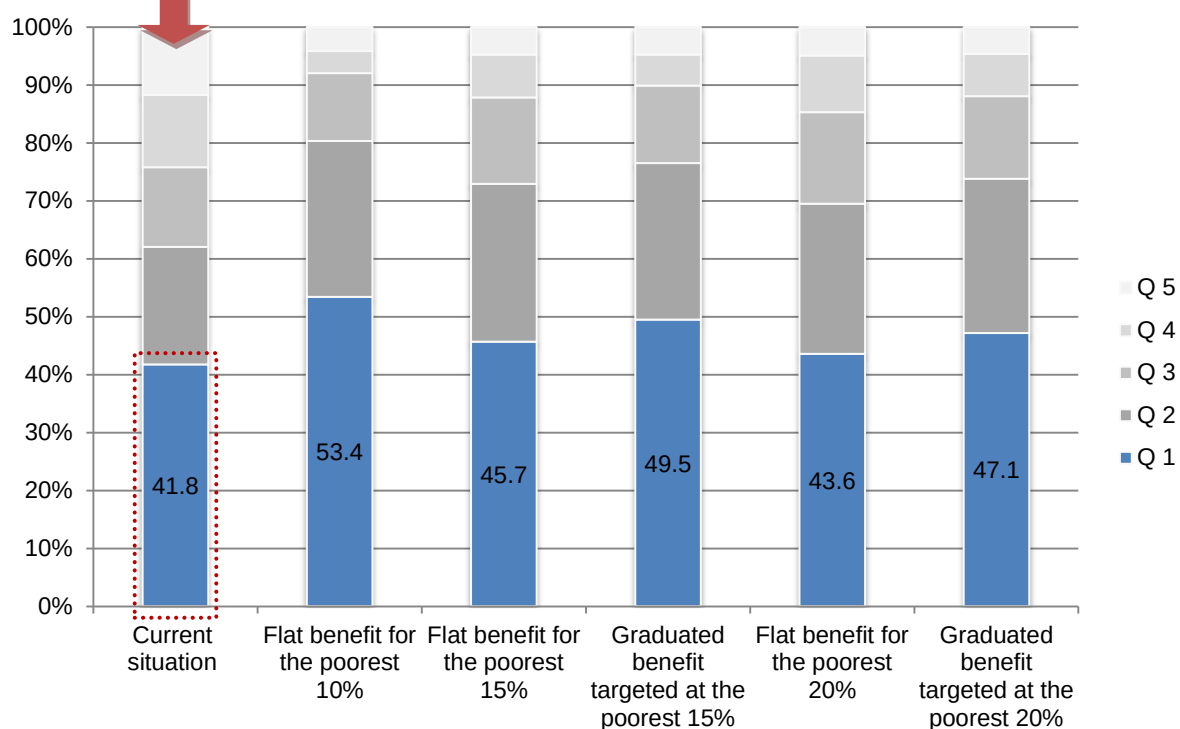
The average share of benefits in post-transfer household consumption of the first consumption quintile is (a) largest in this scenario (it amounts to 34.5%) and (b) shows the smallest decrease from the current situation of only 3.5 percentage points (from 38 to 34.5%).

Figure A 1. Distribution of benefits allocated through the PMT model, different benefit options, by quintiles of pre-transfer consumption, scenario A1, FBiH



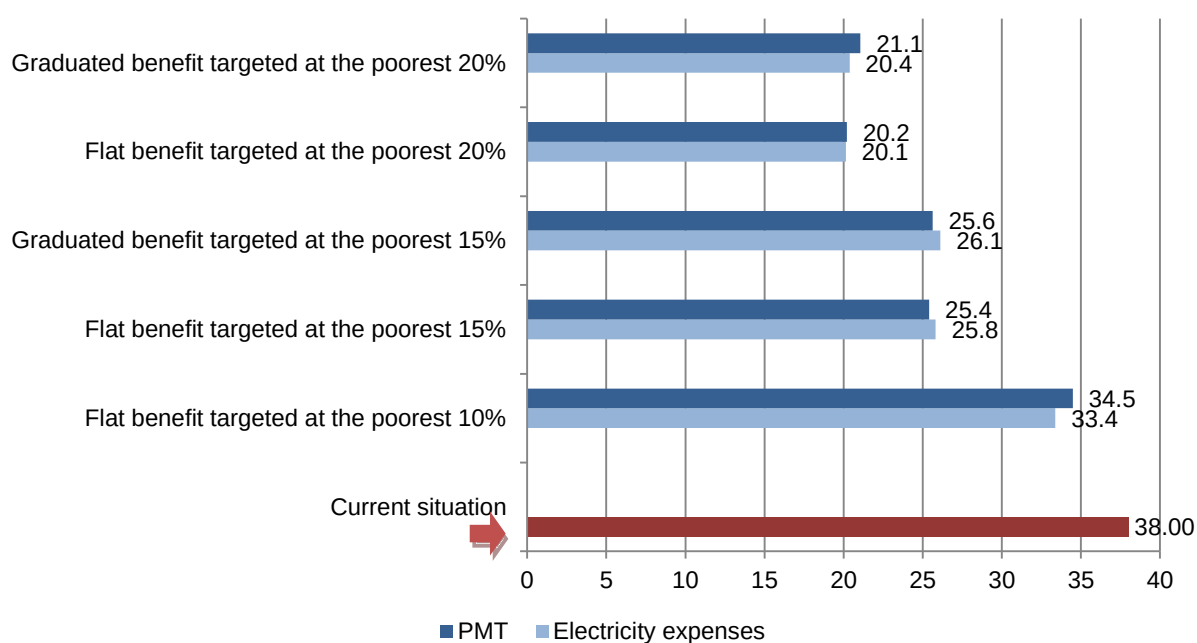
Source: Author's calculations based on HBS 2011. Note: Consumption quintiles are based on monthly per adult equivalent consumption (OECD 1 scale) before allocation of transfers that are to be replaced in scenario A1.

Figure A 2. Distribution of benefits allocated through the electricity expenditures model, different benefit options, by quintiles of pre-transfer consumption, scenario A1, FBiH



Source: Author's calculations based on HBS 2011. Note: Consumption quintiles are based on monthly per adult equivalent consumption (OECD 1 scale) before allocation of transfers that are to be replaced in scenario A1.

Figure A 3. Share of benefits in the post-transfer consumption of beneficiary households, PMT model and electricity expenditure model, first consumption quintile, scenario A1, FBiH



Source: Author's calculations based on HBS 2011. Note: Consumption quintiles are based on monthly per adult equivalent consumption (OECD 1 scale) before allocation of transfers that are to be replaced in scenario A1.

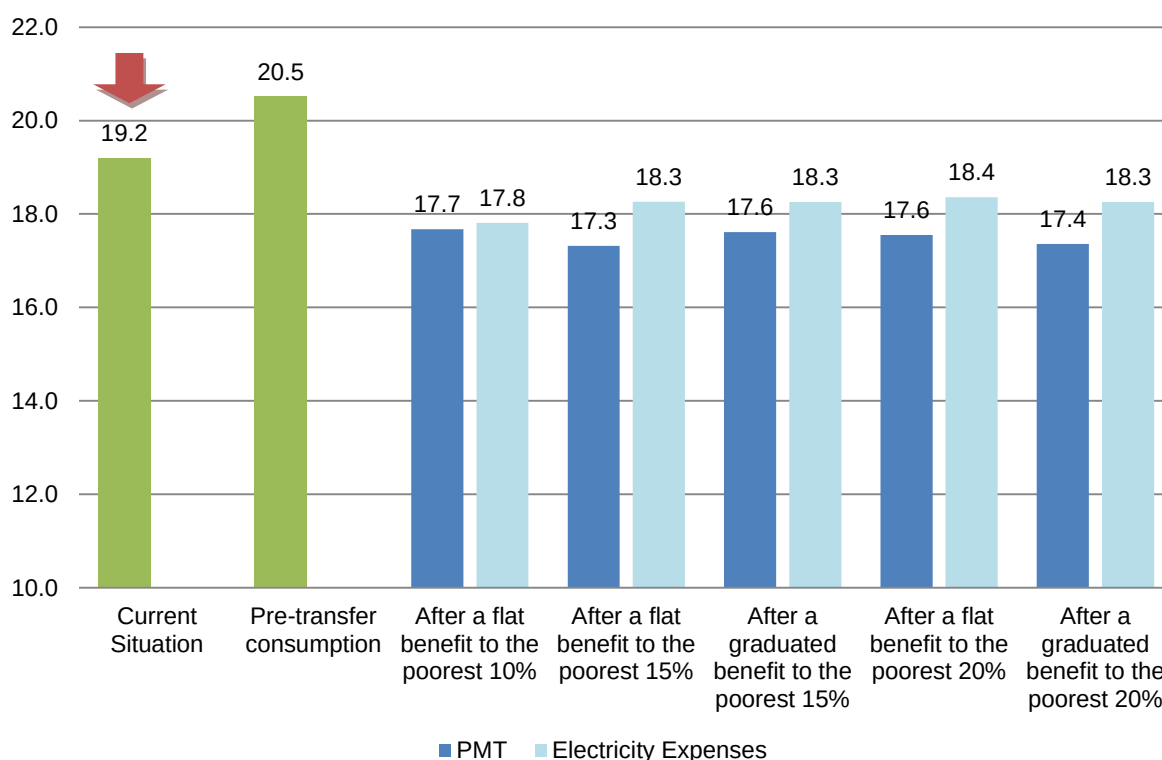
Poverty impacts

This simulation allows us to examine the effect on poverty alleviation of a needs-based program comparable with the program simulated in scenario II, but with a much larger budget. If, in addition to the civilian benefits substituted in scenario II, some of the veteran's benefits are replaced as well, the budget for benefit allocation increases considerably. Consequently, benefits levels are higher, leading to a larger reduction in both poverty incidence and depth of poverty (see Figure A 4 - Figure A 6).

According to our simulations, a new program targeted using a PMT would reduce the poverty headcount ratio from 19.2% to approximately 17.3-18.3% (see Figure A 4). A program targeting the poorest 15% allocating flat benefit amounts shows the best performance in reducing the number of poor. The reduction in the poverty rate as a result of this option is approximately 2 percentage points. When using the electricity expenditures model to determine eligibility, the new program would result in a smaller reduction of the poverty rate – to 17.8% in the best case.

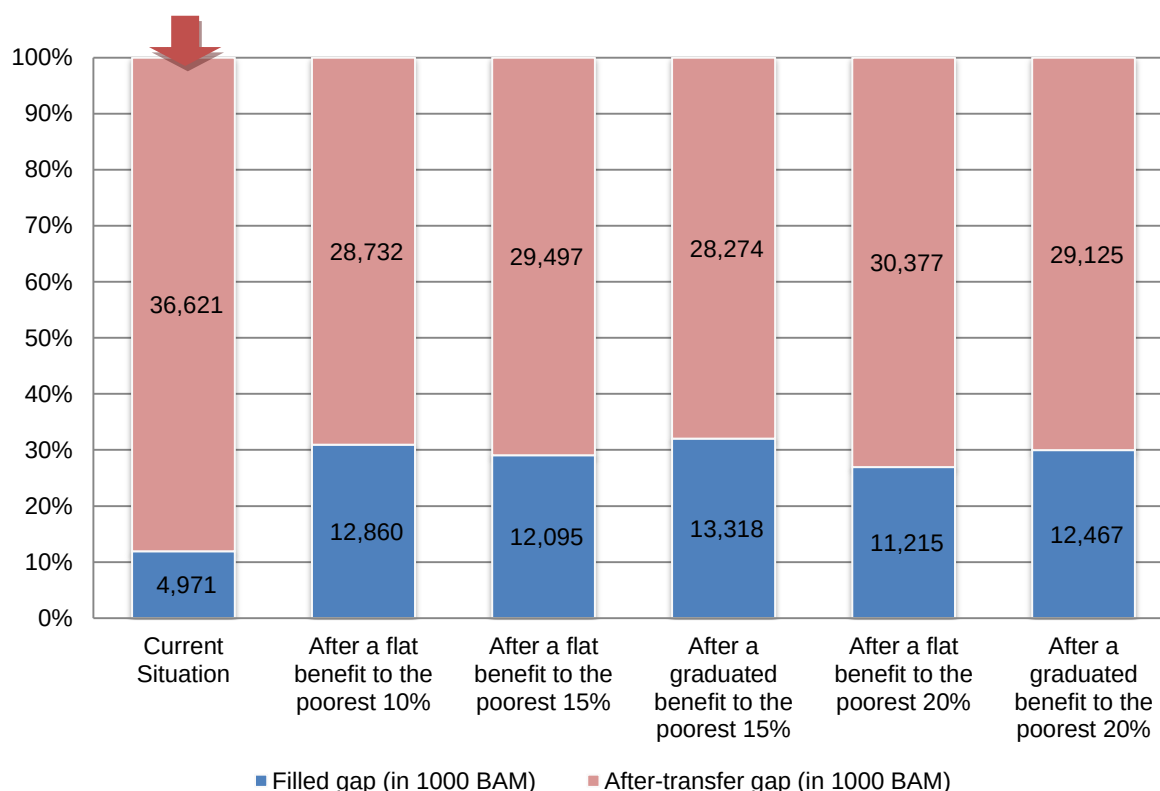
The impact of the different options on the depth of poverty is displayed in Figure A 5 and Figure A 6. In this scenario the program based on PMT results in up to 32% reduction of the poverty gap in contrast to only 11% reduction under the current conditions. The program targeted through the method using electricity expenditures achieves a decrease in the gap of about 20%. Comparing the two types of benefits for program size of 15% and 20%, it is visible that allocating graduated benefits by brackets yields better results than allocating flat benefits.

Figure A 4. Poverty rates, selected program sizes and benefit types, PMT and electricity expenditure model, scenario A 1, FBIH



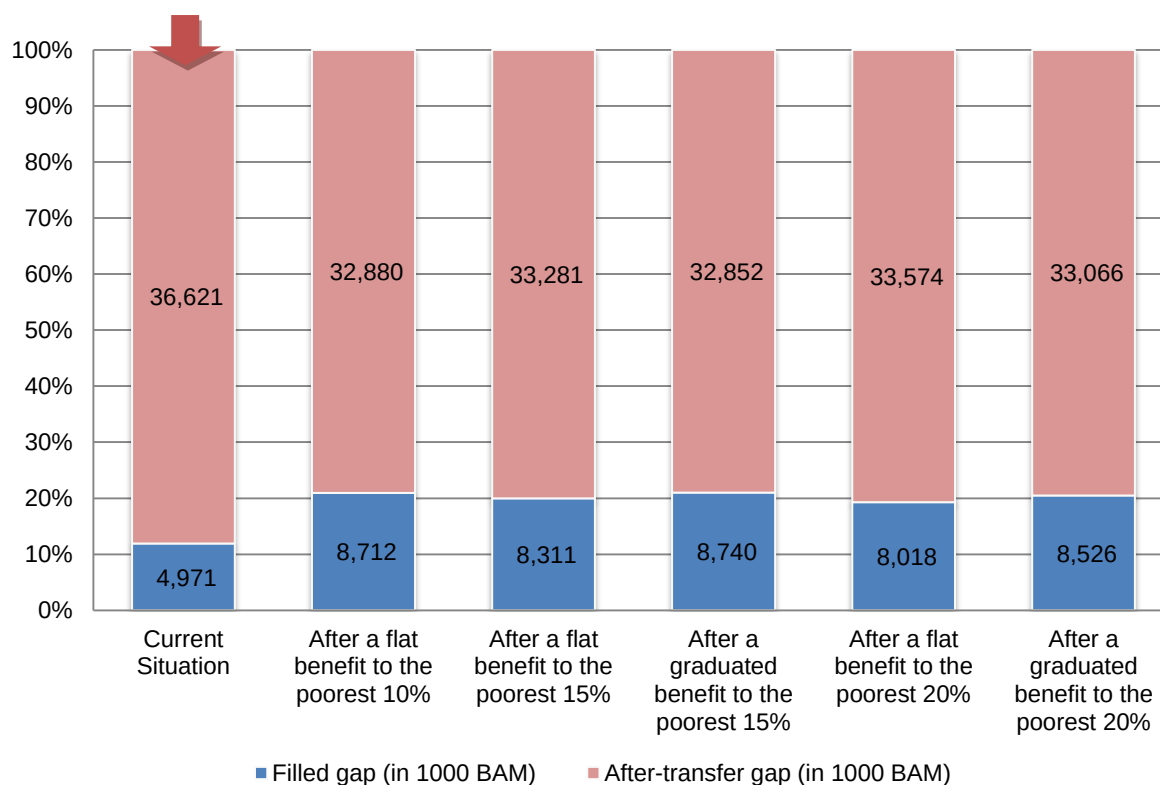
Source: Author's calculations based on HBS 2011.

Figure A 5. Poverty gap, selected program sizes and benefit types, PMT model, scenario A 1, FBiH



Source: Author's calculations based on HBS 2011.

Figure A 6. Poverty gap, selected program sizes and benefit types, electricity expenditure model, scenario A 1, FBiH



Source: Author's calculations based on HBS 2011.

2. Formulae

1. Distribution of benefits

The distribution of benefits describes the share of total benefits allocated to each quintile. For the first quintile the calculation is as follows:

$$\text{Distribution of benefits} = \frac{\sum \text{Benefits allocated to individuals in Q1}}{\sum \text{All allocated benefits}} \times 100$$

2. Benefits as a share of post-transfer consumption of beneficiary households

The average share of benefits in post-transfer household consumption across consumption quintiles shows us the adequacy of benefits. For the first quintile it is calculated as follows:

$$\text{Share of benefits (Q1)} = \frac{1}{n} \times \sum_{i=1}^n \frac{\text{Benefit amount received by household } i \text{ in Q1}}{\text{Post-transfer consumption of household } i}$$

where n is the total number of households receiving benefits in the first quintile.

3. Poverty rate

The poverty rate, also known as poverty headcount ratio, indicates what part of the total population is poor (i.e. below the poverty line). Thus, the share of poor individuals in the total population is the poverty rate. The formula for calculation of the poverty rate is:

$$\text{Poverty Rate (in \%)} = \frac{\text{Total number of poor individuals}}{\text{Total population}} \times 100$$

4. Poverty gap

The poverty gap shows the depth of poverty. It indicates the total amount of money necessary to lift all poor to the minimum consumption level. The poverty gap is calculated by applying the following formula:

$$\text{Poverty Gap (in BAM)} = \sum (350 - \text{consumption level of } X)$$

where X is every poor individual.

3. Tables

Table A 5. Comparison of the budget derived from administrative data to the budget extrapolated from HBS 2011 data.

<i>Scenario</i>	<i>Budget:</i>	<i>Budget:</i>	<i>Budget:</i>	<i>Difference</i>
	<i>Administrative</i>	<i>Administrative</i>	<i>Extrapolated</i>	<i>(in % of the</i>
	<i>data 2011</i>	<i>data 2011</i>	<i>from HBS 2011</i>	<i>extrapolated</i>
	<i>Annual</i>	<i>Monthly</i>	<i>Monthly</i>	<i>Monthly</i>
Scenario I	179,592,045	14,966,004	6,807,014	220%
Scenario II	97,586,149	8,132,179	4,459,249	182%
Scenario III	168,410,191	18,981,487	7,633,818	249%
Scenario A1	368,549,108	30,712,426	14,900,000	206%

Source: Author's calculations based on FBiH budget data for 2011 from the report "Non-contributory cash benefits in BiH: What Works and What Does Not" and on HBS 2011.

Table A 6. Calculations of benefit levels and budgets, Scenario I, FBiH

	Population share	Total Population	Nominal GDP (2011)	Extrapolated budget (BAM)
BiH	100%	3,169,986	25,474,000,000	0.50%
FBiH	64%	2,043,587	16,208,100,000	6,807,014

1. Categorical benefits - disability

	Criteria	Program size: Number of beneficiaries as a share of total population	Number of beneficiaries	Benefit amount per individual (BAM)	Total Budget - Individuals
				<i>Flat - per disabled</i>	
Flat benefit	<i>All currently eligible for LTC</i>	0.3%	6,257	138.00	863,491

2. Categorical benefits - children

	Criteria	Program size: Number of beneficiaries as a share of total population	Number of beneficiaries	Benefit amount per individual (BAM)	Total Budget - Individuals - Rounded
				<i>Flat - per child</i>	
Flat benefit	<i>All children below 6 years old</i>	5.8%	119,267	12.00	1,431,200

3. PMT model

	Criteria	Program size: Number of beneficiaries as a share of total population	Number of beneficiaries	Benefit amount per individual (BAM)	Total Budget - Individuals
1. Flat benefit					
1.1. All			<i>Individuals</i>	<i>Flat - Per individual</i>	
Program size 10%	<i>PAE1 consumption < 334</i>	10%	203,988	22.00	4,487,740
Program size 15%	<i>PAE1 consumption < 370</i>	15%	305,549	15.00	4,583,234
Program size 20%	<i>PAE1 consumption < 399</i>	20%	407,114	11.00	4,478,258
2. Graduated benefits					
2.1. Brackets - 15%	<i>PAE1 consumption < 370</i>		<i>Individuals</i>	<i>Brackets - 15%</i>	
<i>Total</i>	<i>X * flat benefit (15)</i>	15%	305,549	<i>per individual</i>	4,692,510
1 bracket: < 5%	1.5	5%	102,525	23.00	2,358,080
2 bracket: 5% - 10%	1	5%	101,463	15.00	1,521,945
3 bracket: 10% - 15%	0.5	5%	101,561	8.00	812,486
2.2. Brackets - 20%	<i>PAE1 consumption < 399</i>		<i>Individuals</i>	<i>Brackets - 20%</i>	
<i>Total</i>	<i>X * flat benefit (11)</i>	20%	407,114	<i>per individual</i>	4,380,131
1 bracket: < 10%	1.4	10%	203,988	15.00	3,059,823
2 bracket: 10% - 15%	0.8	5%	101,561	9.00	914,046
3 bracket: 15% - 20%	0.4	5%	101,566	4.00	406,262

4. Utility expenditures

	Criteria	Program size: Number of beneficiaries as a share of total population	Number of beneficiaries	Benefit amount per individual (BAM)	Total Budget - Individuals
1. Flat benefit					
1.1. All households			<i>Individuals</i>	<i>Flat - per individual</i>	
Program size 10%	<i>PAE1 electricity expenditure < 10.57</i>	10%	204,455	22.00	4,498,017
Program size 15%	<i>PAE1 electricity expenditure < 11.97</i>	15%	306,885	15.00	4,603,272
Program size 20%	<i>PAE1 electricity expenditure < 13.14</i>	20%	409,683	11.00	4,506,516
2. Graduated benefits					
2.1 Brackets - 15 %	<i>PAE1 electricity expenditure < 11.97</i>		<i>Individuals</i>	<i>Brackets - 15%</i>	
<i>Total</i>	<i>X * flat benefit (15)</i>	15%	306,885	<i>per individual</i>	4,711,045
1 bracket: < 5%	1.5	5%	103,097	23.00	2,371,236
2 bracket: 5% - 10%	1	5%	101,358	15.00	1,520,373
3 bracket: 10% - 15%	0.5	5%	102,430	8.00	819,436
2.1 Brackets - 20 %	<i>PAE1 electricity expenditure < 13.14</i>		<i>Individuals</i>	<i>Brackets - 20%</i>	
<i>Total</i>	<i>X * flat benefit (11)</i>	20%	409,683	<i>per individual</i>	4,399,889
1 bracket: <10%	1.4	10%	204,455	15.00	3,066,830
2 bracket: 10% - 15%	0.8	5%	102,430	9.00	921,866
3 bracket: 15% - 20%	0.4	5%	102,799	4.00	411,194

Source: Author's calculations based on HBS 2011. Note: PAE1 refers to Per Adult Equivalent (consumption or electricity expenditure) using the OECD 1 scale.

Table A 7. Calculations of benefit levels and budgets, Scenario II, FBiH

	Population share	Total Population	Nominal GDP (2011)	Extrapolated budget (BAM)
BiH	100%	3,169,986	25,474,000,000	0.33%
FBiH	64%	2,043,587	16,208,100,000	4,459,249

1. PMT model

	Criteria	Program size: Number of beneficiaries as a share of total population	Number of beneficiaries	Benefit amount per individual (BAM)	Total Budget - Individuals
1. Flat benefit					
1.1. All			<i>Individuals</i>	<i>Flat - per individual</i>	
Program size 10%	<i>PAE1 consumption < 334</i>	10%	203,988	22.00	4,487,740
Program size 15%	<i>PAE1 consumption < 370</i>	15%	305,549	15.00	4,583,234
Program size 20%	<i>PAE1 consumption < 399</i>	20%	407,114	11.00	4,478,258
2. Graduated benefits					
2.1. Brackets - 15%	<i>PAE1 consumption < 370</i>		<i>Individuals</i>	<i>Brackets - 15%</i>	
<i>Total</i>	<i>X * flat benefit (15)</i>	15%	305,549	<i>per individual</i>	4,488,424
1 bracket: < 5%	1.5	5%	102,525	22.00	2,255,554
2 bracket: 5% - 10%	1	5%	101,463	15.00	1,521,945
3 bracket: 10% - 15%	0.5	5%	101,561	7.00	710,925
2.2. Brackets - 20%	<i>PAE1 consumption < 399</i>		<i>Individuals</i>	<i>Brackets - 20%</i>	
<i>Total</i>	<i>X * flat benefit (11)</i>	20%	407,114	<i>per individual</i>	4,380,131
1 bracket: < 10%	1.4	10%	203,988	15.00	3,059,823
2 bracket: 10% - 15%	0.8	5%	101,561	9.00	914,046
3 bracket: 15% - 20%	0.4	5%	101,566	4.00	406,262

2. Utility expenditures

	Criteria	Program size: Number of beneficiaries as a share of total population	Number of beneficiaries	Benefit amount per individual (BAM)	Total Budget - Individuals
1. Flat benefit					
1.1. All households			<i>Individuals</i>	<i>Flat - per individual</i>	
Program size 10%	<i>PAE1 electricity expenditure < 10.57</i>	10%	204,455	22.00	4,498,017
Program size 15%	<i>PAE1 electricity expenditure < 11.97</i>	15%	306,885	15.00	4,603,272
Program size 20%	<i>PAE1 electricity expenditure < 13.14</i>	20%	409,683	11.00	4,506,516
2. Graduated benefits					
2.1 Brackets - 15 %	<i>PAE1 electricity expenditure < 11.97</i>		<i>Individuals</i>	<i>Brackets - 15%</i>	
<i>Total</i>	<i>X * flat benefit (15)</i>	15%	306,885	<i>per individual</i>	4,505,518
1 bracket: < 5%	1.5	5%	103,097	22.00	2,268,138
2 bracket: 5% - 10%	1	5%	101,358	15.00	1,520,373
3 bracket: 10% - 15%	0.5	5%	102,430	7.00	717,007
2.1 Brackets - 20 %	<i>PAE1 electricity expenditure < 13.14</i>		<i>Individuals</i>	<i>Brackets - 20%</i>	
<i>Total</i>	<i>X * flat benefit (11)</i>	20%	409,683	<i>per individual</i>	4,399,889
1 bracket: <10%	1.4	10%	204,455	15.00	3,066,830
2 bracket: 10% - 15%	0.8	5%	102,430	9.00	921,866
3 bracket: 15% - 20%	0.4	5%	102,799	4.00	411,194

Source: Author's calculations based on HBS 2011. Note: PAE1 refers to Per Adult Equivalent (consumption or electricity expenditure) using the OECD 1 scale.

Table A 8. Calculations of benefit levels and budgets, Scenario III, FBiH

	Population share	Total Population	Nominal GDP (2011)	Extrapolated budget HBS 2011 (BAM)
BiH	100%	3,169,986	25,474,000,000	0.57%
FBiH	64%	2,043,587	16,208,100,000	7,633,818

1. PMT model

	Criteria	Program size: Number of beneficiaries as a share of total population	Number of beneficiaries	Benefit amount per individual (BAM)	Total Budget - Individuals
1. Flat					
1.1. All			<i>Individuals</i>	<i>Flat - per individual</i>	
Program size 10%	<i>PAE1 consumption < 334</i>	10.0%	203,988	37.00	7,547,563
Program size 15%	<i>PAE1 consumption < 370</i>	15.0%	305,549	25.00	7,638,723
Program size 20%	<i>PAE1 consumption < 399</i>	19.9%	407,114	19.00	7,735,174
2. Graduated benefits					
2.1. Brackets - 15%	<i>PAE1 consumption < 370</i>		<i>Individuals</i>	<i>Brackets - 15%</i>	
<i>Total</i>	X * flat benefit (25)	15.0%	305,549	<i>per individual</i>	7,548,736
1 bracket: < 5%	1.5	5.0%	102,525	37.00	3,793,432
2 bracket: 5% - 10%	1	5.0%	101,463	25.00	2,536,575
3 bracket: 10% - 15%	0.5	5.0%	101,561	12.00	1,218,728
2.2. Brackets - 20%	<i>PAE1 consumption < 399</i>		<i>Individuals</i>	<i>Brackets - 20%</i>	
<i>Total</i>	X * flat benefit (19)	19.9%	407,114	<i>per individual</i>	7,639,628
1 bracket: < 10%	1.4	10.0%	203,988	26.00	5,303,693
2 bracket: 10% - 15%	0.8	5.0%	101,561	15.00	1,523,411
3 bracket: 15% - 20%	0.4	5.0%	101,566	8.00	812,524

2. Utility expenditures

	Criteria	Program size: Number of beneficiaries as a share of total population	Number of beneficiaries	Benefit amount per individual (BAM)	Total Budget - Individuals
1. Flat					
1.1. All individuals			<i>Individuals</i>	<i>Flat - per individual</i>	
Program size 10%	<i>PAE1 electricity expenditure < 10.57</i>	10.0%	204,455	37.00	7,564,846
Program size 15%	<i>PAE1 electricity expenditure < 11.97</i>	15.0%	306,885	25.00	7,672,120
Program size 20%	<i>PAE1 electricity expenditure < 13.14</i>	20.0%	409,683	19.00	7,783,983
2. Graduated benefits					
2.1 Brackets - 15 %	<i>pae elec exp < 11.97</i>		<i>Individuals</i>	<i>Brackets - 15%</i>	
<i>Total</i>	X * flat benefit	15.0%	306,885	<i>per individual</i>	7,577,705
1 bracket: < 5%	1.5	5.0%	103,097	37.00	3,814,596
2 bracket: 5% - 10%	1	5.0%	101,358	25.00	2,533,955
3 bracket: 10% - 15%	0.5	5.0%	102,430	12.00	1,229,154
2.1 Brackets - 20 %	<i>pae elec exp < 13.14</i>		<i>Individuals</i>	<i>Brackets - 20%</i>	
<i>Total</i>	X * flat benefit	20.0%	409,683	<i>per individual</i>	7,571,870
1 bracket: <10%	1.4	10.0%	204,455	26.00	5,315,838
2 bracket: 10% - 15%	0.8	5.0%	102,430	15.00	1,536,443
3 bracket: 15% - 20%	0.4	5.0%	102,799	7.00	719,590

Table A 8, continued. Calculations of benefit levels and budgets, Scenario III, FBiH

3. PMT + filter

	Criteria	Program size: Number of beneficiaries as a share of total population	Number of beneficiaries	Benefit amount per individual (BAM)	Total Budget - Individuals
1. Flat	<i>Household has no garage and...</i>				
1.1. All individuals			<i>Individuals</i>	<i>Flat - per individual</i>	
Program size 10%	<i>PAE1 consumption < 334</i>	10.0%	174,223	44.00	7,665,825
Program size 15%	<i>PAE1 consumption < 370</i>	15.0%	237,429	32.00	7,597,725
Program size 20%	<i>PAE1 consumption < 399</i>	19.9%	302,984	25.00	7,574,593
2. Graduated benefits					
2.1 Brackets - 15 %	<i>PAE1 consumption < 370</i>		<i>Individuals</i>	<i>Brackets - 15%</i>	
<i>Total</i>	<i>X * flat benefit (32)</i>	<i>15.0%</i>	<i>237,429</i>	<i>per individual</i>	7,580,390
1 bracket: < 5%	1.4	5.0%	94,789	45.00	4,265,507
2 bracket: 5% - 10%	0.9	5.0%	79,434	29.00	2,303,594
3 bracket : 10% - 15%	0.5	5.0%	63,206	16.00	1,011,289
2.1 Brackets - 20 %	<i>PAE1 consumption < 399</i>		<i>Individuals</i>	<i>Brackets - 20%</i>	
<i>Total</i>	<i>X * flat benefit (25)</i>	<i>19.9%</i>	<i>302,984</i>	<i>per individual</i>	7,669,029
1 bracket:<10%	1.3	10.0%	174,223	33.00	5,749,370
2 bracket: 10% - 15%	0.8	5.0%	63,206	20.00	1,264,111
3 bracket : 15% - 20%	0.4	5.0%	65,555	10.00	655,549

Source: Author's calculations based on HBS 2011. Note: PAE1 refers to Per Adult Equivalent (consumption or electricity expenditure) using the OECD 1 scale.

Table A 9. Calculations of benefit levels and budgets, Scenario A1, FBiH

	Population share	Total Population	Nominal GDP (2011)	Extrapolated budget (BAM)
BiH	100%	3,169,986	25,474,000,000	1.11%
FBiH	64%	2,043,587	16,208,100,000	14,943,215

1. PMT model

	Criteria	Program size: Number of beneficiaries as a share of total population	Number of beneficiaries	Benefit amount per individual (BAM)	Total Budget - Individuals
1. Flat benefit					
1.1. All			<i>Individuals</i>	<i>Flat - per individual</i>	
Program size 10%	<i>PAE1 consumption < 334</i>	10%	203,988	73.00	14,891,139
Program size 15%	<i>PAE1 consumption < 370</i>	15%	305,549	49.00	14,971,896
Program size 20%	<i>PAE1 consumption < 399</i>	20%	407,114	37.00	15,063,233
2. Graduated benefits					
2.1. Brackets - 15%	<i>PAE1 consumption < 370</i>		<i>Individuals</i>	<i>Brackets - 15%</i>	
<i>Total</i>	<i>X * flat benefit (49)</i>		<i>305,549</i>	<i>per individual</i>	<i>14,893,483</i>
1 bracket: < 5%	1.5	5%	102,525	73.00	7,484,340
2 bracket: 5% - 10%	1	5%	101,463	49.00	4,971,687
3 bracket: 10% - 15%	0.5	5%	101,561	24.00	2,437,457
2.2. Brackets - 20%	<i>PAE1 consumption < 399</i>		<i>Individuals</i>	<i>Brackets - 20%</i>	
<i>Total</i>	<i>X * flat benefit (37)</i>		<i>407,114</i>	<i>per individual</i>	<i>14,872,141</i>
1 bracket: < 10%	1.4	10%	203,988	51.00	10,403,398
2 bracket: 10% - 15%	0.8	5%	101,561	29.00	2,945,260
3 bracket: 15% - 20%	0.4	5%	101,566	15.00	1,523,483

2. Utility expenditures

	Criteria	Program size: Number of beneficiaries as a share of total population	Number of beneficiaries	Benefit amount per individual (BAM)	Total Budget - Individuals
1. Flat benefit					
1.1. All households			<i>Individuals</i>	<i>Flat - per individual</i>	
Program size 10%	<i>PAE1 electricity expenditure < 10.57</i>	10%	204,455	73.00	14,925,237
Program size 15%	<i>PAE1 electricity expenditure < 11.97</i>	15%	306,885	49.00	15,037,355
Program size 20%	<i>PAE1 electricity expenditure < 13.14</i>	20%	409,683	36.00	14,748,599
2. Graduated benefits					
2.1 Brackets - 15 %	<i>PAE1 electricity expenditure < 11.97</i>		<i>Individuals</i>	<i>Brackets - 15%</i>	
<i>Total</i>	<i>X * flat benefit (49)</i>	<i>15%</i>	<i>306,885</i>	<i>per individual</i>	<i>14,950,955</i>
1 bracket: < 5%	1.5	5%	103,097	73.00	7,526,096
2 bracket: 5% - 10%	1	5%	101,358	49.00	4,966,552
3 bracket: 10% - 15%	0.5	5%	102,430	24.00	2,458,308
2.1 Brackets - 20 %	<i>PAE1 electricity expenditure < 13.14</i>		<i>Individuals</i>	<i>Brackets - 20%</i>	
<i>Total</i>	<i>X * flat benefit (36)</i>	<i>20%</i>	<i>409,683</i>	<i>per individual</i>	<i>14,939,653</i>
1 bracket: <10%	1.4	10%	204,455	51.00	10,427,220
2 bracket: 10% - 15%	0.8	5%	102,430	29.00	2,970,456
3 bracket: 15% - 20%	0.4	5%	102,799	15.00	1,541,978

Source: Author's calculations based on HBS 2011. Note: PAE1 refers to Per Adult Equivalent (consumption or electricity expenditure) using the OECD 1 scale.

Table A 10. Share of benefits in total post-transfer consumption of beneficiary households, by quintiles, Scenario I, FBiH

			Quintiles based on pre-transfer pae1 consumption				
1. Dis + child + PMT	Program size		1	2	3	4	5
Total benefits (Cat + PMT flat 10%)	N.a.	benefit in % of post-transfer hh cons (average)	12.207	3.417	1.744	0.958	0.849
		standard error (%)	0.653	0.247	0.188	0.131	0.172
Total benefits (Cat + PMT flat 15%)	N.a.	benefit in % of post-transfer hh cons (average)	9.887	3.315	1.783	1.102	0.866
		standard error (%)	0.527	0.181	0.168	0.122	0.166
Total benefits (Cat + PMT flat 20%)	N.a.	benefit in % of post-transfer hh cons (average)	7.966	3.050	1.780	1.118	0.861
		standard error (%)	0.442	0.136	0.142	0.116	0.160
Total benefits (Cat + PMT graduated 15%)	N.a.	benefit in % of post-transfer hh cons (average)	10.398	3.092	1.730	0.998	0.851
		standard error (%)	0.574	0.190	0.171	0.118	0.166
Total benefits (Cat + PMT graduated 20%)	N.a.	benefit in % of post-transfer hh cons (average)	8.343	2.663	1.569	1.014	0.832
		standard error (%)	0.471	0.145	0.141	0.113	0.160
2. Dis + child + utility							
Total benefits (Cat + electr. exp. flat 10%)	N.a.	benefit in % of post-transfer hh cons (average)	10.614	3.855	2.161	1.165	1.009
		standard error (%)	0.727	0.233	0.198	0.131	0.162
Total benefits (Cat + electr. exp. flat 15%)	N.a.	benefit in % of post-transfer hh cons (average)	9.145	3.443	2.180	1.273	0.983
		standard error (%)	0.630	0.166	0.157	0.114	0.149
Total benefits (Cat + electr. exp. flat 20%)	N.a.	benefit in % of post-transfer hh cons (average)	7.722	3.094	1.943	1.264	0.944
		standard error (%)	0.522	0.145	0.123	0.096	0.141
Total benefits (Cat + electr. exp. graduated 15%)	N.a.	benefit in % of post-transfer hh cons (average)	9.454	3.403	2.044	1.165	0.991
		standard error (%)	0.640	0.183	0.158	0.111	0.151
Total benefits (Cat + electr. exp. graduated 20%)	N.a.	benefit in % of post-transfer hh cons (average)	7.831	3.032	1.799	1.104	0.923
		standard error (%)	0.542	0.150	0.130	0.095	0.142

Source: Author's calculations based on HBS 2011. Note: "Post-transfer hh cons" refers to consumption of beneficiary households after allocation of transfers to be replaced in scenario I. Consumption quintiles are based on monthly per adult equivalent consumption (OECD 1 scale) before allocation of transfers that are to be replaced in scenario I.

Table A 11. Share of benefits in total post-transfer consumption, by quintiles, Scenario II, FBiH**1. PMT model**

1. Flat benefit to all individuals			Quintiles based on pre-transfer pae1 consumption					
Program size			1	2	3	4	5	
10%	benefit in % of post-transfer hh cons (average)		14.356	6.535	4.856	3.790	1.994	
		standard error (%)	0.649	0.099	0.098	0.219	0.098	
	15%	benefit in % of post-transfer hh cons (average)		10.024	4.540	3.359	2.518	1.553
			standard error (%)	0.498	0.054	0.059	0.066	0.075
	20%	benefit in % of post-transfer hh cons (average)		7.409	3.357	2.433	1.872	1.094
			standard error (%)	0.387	0.032	0.034	0.039	0.047
2. Benefits by brackets to all individuals	15%	benefit in % of post-transfer hh cons (average)		10.512	3.937	2.922	1.655	1.176
			standard error (%)	0.563	0.169	0.214	0.181	0.215
	20%	benefit in % of post-transfer hh cons (average)		7.995	2.828	1.848	1.374	0.776
			standard error (%)	0.431	0.108	0.120	0.106	0.105
	2. Utility expenditures							
				Quintiles based on pre-transfer pae1 consumption				
1. Flat benefit to all individuals	10%	benefit in % of post-transfer hh cons (average)		13.715	6.739	4.782	3.433	2.253
			standard error (%)	0.793	0.082	0.098	0.094	0.137
	15%	benefit in % of post-transfer hh cons (average)		10.265	4.662	3.343	2.423	1.498
			standard error (%)	0.661	0.048	0.044	0.042	0.072
	20%	benefit in % of post-transfer hh cons (average)		7.598	3.451	2.449	1.813	1.125
			standard error (%)	0.482	0.034	0.026	0.027	0.050
2. Benefits by brackets to all individuals	15%	benefit in % of post-transfer hh cons (average)		10.568	4.467	2.926	1.914	1.504
			standard error (%)	0.671	0.165	0.147	0.128	0.156
	20%	benefit in % of post-transfer hh cons (average)		7.918	3.427	2.174	1.413	1.060
			standard error (%)	0.519	0.113	0.096	0.081	0.089

Source: Author's calculations based on HBS 2011. Note: "Post-transfer hh cons" refers to consumption of beneficiary households after allocation of transfers to be replaced in scenario II. Consumption quintiles are based on monthly per adult equivalent consumption (OECD 1 scale) before allocation of transfers that are to be replaced in scenario II.

Table A 12. Share of benefits in total post-transfer consumption, by quintiles, Scenario III, FBiH**1. PMT model**

			Quintiles based on pre-transfer pae1 consumption				
1. Flat benefit to all individuals	Program size		1.000	2.000	3.000	4.000	5.000
	10%	benefit in % of post-transfer hh cons (average)	21.571	10.671	8.029	6.212	3.308
		standard error (%)	0.711	0.166	0.185	0.350	0.161
	15%	benefit in % of post-transfer hh cons (average)	15.213	7.406	5.536	4.127	2.561
		standard error (%)	0.545	0.090	0.102	0.107	0.123
	20%	benefit in % of post-transfer hh cons (average)	11.750	5.710	4.179	3.197	1.878
		standard error (%)	0.436	0.056	0.060	0.067	0.078
2. Benefits by brackets to all individuals	15%	benefit in % of post-transfer hh cons (average)	15.726	6.457	4.923	2.721	1.942
		standard error (%)	0.652	0.273	0.372	0.291	0.352
	20%	benefit in % of post-transfer hh cons (average)	12.542	4.773	3.270	2.348	1.332
		standard error (%)	0.507	0.181	0.211	0.178	0.179

2. Utility expenditures

			Quintiles based on pre-transfer pae1 consumption				
1. Flat benefit to all individuals	Program size		1.000	2.000	3.000	4.000	5.000
	10%	benefit in % of post-transfer hh cons (average)	20.602	10.894	7.821	5.664	3.735
		standard error (%)	0.860	0.128	0.153	0.154	0.223
	15%	benefit in % of post-transfer hh cons (average)	15.429	7.573	5.497	3.983	2.484
		standard error (%)	0.727	0.076	0.073	0.068	0.118
	20%	benefit in % of post-transfer hh cons (average)	12.010	5.851	4.178	3.112	1.934
		standard error (%)	0.546	0.055	0.045	0.047	0.085
2. Benefits by brackets to all individuals	15%	benefit in % of post-transfer hh cons (average)	15.820	7.267	4.789	3.153	2.482
		standard error (%)	0.773	0.258	0.233	0.209	0.252
	20%	benefit in % of post-transfer hh cons (average)	12.363	5.801	3.742	2.408	1.821
		standard error (%)	0.609	0.187	0.163	0.135	0.152

3. PMT + filter

			Quintiles based on pre-transfer pae1 consumption				
1. Flat benefit to all individuals	Program size		1.000	2.000	3.000	4.000	5.000
	10%	benefit in % of post-transfer hh cons (average)	24.667	12.530	9.384	7.609	3.909
		standard error (%)	0.804	0.205	0.250	0.354	0.189
	15%	benefit in % of post-transfer hh cons (average)	18.820	9.257	6.857	5.267	3.159
		standard error (%)	0.665	0.119	0.159	0.131	0.145
	20%	benefit in % of post-transfer hh cons (average)	15.115	7.324	5.318	4.168	2.388
		standard error (%)	0.553	0.079	0.090	0.093	0.085
2. Benefits by brackets to all individuals	15%	benefit in % of post-transfer hh cons (average)	18.868	7.923	5.995	3.552	2.447
		standard error (%)	0.780	0.353	0.530	0.444	0.451
	20%	benefit in % of post-transfer hh cons (average)	15.688	6.211	3.939	3.152	1.782
		standard error (%)	0.627	0.250	0.291	0.280	0.251

Source: Author's calculations based on HBS 2011. Note: "Post-transfer hh cons" refers to consumption of beneficiary households after allocation of transfers to be replaced in scenario III. Consumption quintiles are based on monthly per adult equivalent consumption (OECD 1 scale) before allocation of transfers that are to be replaced in scenario III.

Table A 13. Share of benefits in total post-transfer consumption, by quintiles, Scenario A1, FBiH**1. PMT model**

			Quintiles based on pre-transfer pae1 consumption				
1. Flat benefit to all individuals	Program size		1	2	3	4	5
	10%	benefit in % of pre-transfer hh cons (average)	34.487	19.402	15.036	11.547	6.447
		standard error (%)	0.795	0.306	0.335	0.615	0.387
	15%	benefit in % of pre-transfer hh cons (average)	25.416	13.702	10.463	7.776	4.923
		standard error (%)	0.631	0.166	0.190	0.193	0.227
	20%	benefit in % of pre-transfer hh cons (average)	20.217	10.635	7.900	6.030	3.594
		standard error (%)	0.530	0.103	0.112	0.117	0.151
2. Benefits by brackets to all individuals	15%	benefit in % of pre-transfer hh cons (average)	25.630	11.764	9.618	5.163	3.758
		standard error (%)	0.795	0.466	0.662	0.528	0.684
	20%	benefit in % of pre-transfer hh cons (average)	21.059	8.924	6.261	4.396	2.565
		standard error (%)	0.640	0.329	0.395	0.324	0.348

2. Utility expenditures

			Quintiles based on pre-transfer pae1 consumption				
1. Flat benefit to all individuals	Program size		1	2	3	4	5
	10%	benefit in % of pre-transfer hh cons (average)	33.387	19.586	14.424	10.499	7.222
		standard error (%)	0.994	0.221	0.266	0.278	0.422
	15%	benefit in % of pre-transfer hh cons (average)	25.821	13.951	10.270	7.480	4.840
		standard error (%)	0.859	0.139	0.131	0.126	0.237
	20%	benefit in % of pre-transfer hh cons (average)	20.138	10.676	7.697	5.723	3.656
		standard error (%)	0.669	0.100	0.082	0.084	0.162
2. Benefits by brackets to all individuals	15%	benefit in % of pre-transfer hh cons (average)	26.117	13.365	9.073	5.823	4.818
		standard error (%)	0.969	0.446	0.424	0.369	0.489
	20%	benefit in % of pre-transfer hh cons (average)	20.381	10.580	6.903	4.365	3.440
		standard error (%)	0.784	0.323	0.282	0.239	0.287

Source: Author's calculations based on HBS 2011. Note: "Post-transfer hh cons" refers to consumption of beneficiary households after allocation of transfers to be replaced in scenario III. Consumption quintiles are based on monthly per adult equivalent consumption (OECD 1 scale) before allocation of transfers that are to be replaced in scenario A1

Table A 14. Comparison between current situation (status quo) and situation as simulated for the requested additional scenario, scenario V (making eligibility for current beneficiaries of each separate program subject to a PMT)

		Number of beneficiaries		Monthly benefit levels	
HBS 2011 Question No:	Benefit type	Current situation (extrapolated)	Scenario 5 (after applying a PMT on top of current targeting method)	Current situation (average monthly benefit level - extrapolated)	Scenario 5 - applying a PMT on top of current targeting method (flat benefit level = budget per line / number of beneficiaries per line)
Civilian victims of war			Targeting group	Targeting group	
B11	Personal disability benefit Total budget*: 693,780.60	4,094	Poorest 10%: 259 Poorest 15%: 822 Poorest 20%: 1,235	170	Poorest 10%: 2,678 Poorest 15%: 844 Poorest 20%: 562
B12	LTC & support benefit Total budget*: 160,475.60	1,471	Poorest 10%: 0 Poorest 15%: 0 Poorest 20%: 127	120	Poorest 10%: - Poorest 15%: - Poorest 20%: 1,261
B13	Orthopaedic benefit Total budget*: 14,483.72	145	Poorest 10%: 0 Poorest 15%: 0 Poorest 20%: 0	100	Poorest 10%: - Poorest 15%: - Poorest 20%: -
B14	Survivor depedent benefit Total budget*: 205,679.80	734	Poorest 10%: 127 Poorest 15%: 127 Poorest 20%: 127	280	Poorest 10%: 1,624 Poorest 15%: 1,624 Poorest 20%: 1,624
B15	Monthly personal cash benefit Total budget*: 61,777.78	304	Poorest 10%: 0 Poorest 15%: 0 Poorest 20%: 127	350	Poorest 10%: - Poorest 15%: - Poorest 20%: 485
Non-war persons with disabilities			Targeting group	Targeting group	
B18	Personal disability benefit Total budget*: 2,184,219.00	13,040	Poorest 10%: 2,206 Poorest 15%: 3,654 Poorest 20%: 4,340	170	Poorest 10%: 990 Poorest 15%: 598 Poorest 20%: 503
B19	LTC & support benefit Total budget*: 983,580.50	4,786	Poorest 10%: 585 Poorest 15%: 844 Poorest 20%: 1,452	205	Poorest 10%: 1,681 Poorest 15%: 1,165 Poorest 20%: 678
B20	Orthopaedic benefit Total budget*: -	No observations in data	Poorest 10%: - Poorest 15%: - Poorest 20%: -	No observations in data	Poorest 10%: - Poorest 15%: - Poorest 20%: -
Child-care benefits			Targeting group	Targeting group	
B21	Child-care allowance Total budget*: 1,203,709.00	30,754	Poorest 10%: 7,175 Poorest 15%: 8,750 Poorest 20%: 11,694	40	Poorest 10%: 168 Poorest 15%: 138 Poorest 20%: 103
B22	Maternity benefit Total budget*: 1,030,236.00	2,883	Poorest 10%: 0 Poorest 15%: 0 Poorest 20%: 0	360	Poorest 10%: - Poorest 15%: - Poorest 20%: -
Social assistance			Targeting group	Targeting group	
B26	Permanent financial assistance Total budget*: 1,095,876.00	7,604	Poorest 10%: 203,988 Poorest 15%: 305,549 Poorest 20%: 407,114	155	Poorest 10%: 5 Poorest 15%: 4 Poorest 20%: 3

Source: Author's calculations based on HBS 2011. Note: * The budget amounts in the table correspond to extrapolated budget amounts using HBS 2011