

ADF-14

**Addressing Fragility
in the Performance-Based Allocation System**

Technical Note

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Abbreviations

ADF	African Development Fund
ADF-13	Thirteenth African Development Fund
ADF-14	Fourteenth African Development Fund
AIDI	Africa Infrastructure Development Index
CPA	Country Performance Assessment
CPIA	Country Policy and Institutional Assessment
EVI	Economic Vulnerability Index
FSI	Fragile States Index
GNIpc	Gross National Income per capita
PBA	Performance-Based Allocation
Pop	Population
PPA	Portfolio Performance Assessment
RMC	Regional Member Country
SFI	State Fragility Index
TSF	Transition Support Facility
UA	Unit of Account

ADDRESSING FRAGILITY IN THE PERFORMANCE-BASED ALLOCATION SYSTEM

1. Introduction

- 1.1 This technical note responds to the request during ADF-13 Mid-Term Review to consider how fragility could be explicitly included in the ADF's Performance-Based Allocations (PBA) formula. For the purpose of this note, in line with the Bank Group strategy¹, fragility is defined as a condition of elevated risk of institutional breakdown, societal collapse or violent conflict. Fragility involves an imbalance between the strains and challenges (internal and external) faced by a state and society and their ability to manage them.
- 1.2 The note is organized as follows. Following this introduction, Section 2 presents various options for consideration and the methodology for the simulations. Section 3 discusses the results of the simulations. Finally, Section 4 concludes.

2. Options Explored and Methodology

- 2.1 The PBA formula was adjusted during ADF-13 to include a measure for infrastructure deficit in ADF-eligible countries. The formula has two building blocks: needs and performance. Needs are captured by: Gross National Income per capita (GNIPC); Population (Pop); and infrastructure gap as measured by the Africa Infrastructure Development Index (AIDI). Performance is captured through the Country Performance Assessment (CPA), which is mainly based on the cluster scores (A, B, C, D, and E) of the Country Policy and Institutional Assessment (CPIA) and the Portfolio Performance Assessment (PPA). The PBA formula is:

$$A = CPA^{4.125} \times GNIPC^{-0.125} \times Pop^1 \times AIDI^{-0.25} \quad (1)$$

$$CPA = \begin{cases} 0.20 \times CPIA_{ABC} + 0.58 \times CPIA_D + 0.06 \times CPIA_E + 0.16 \times PPA \\ 0.36 \times CPIA_{ABC} + 0.58 \times CPIA_D + 0.06 \times CPIA_E \text{ if no portfolio} \end{cases} \quad (2)$$

- 2.2 We consider avenues to explicitly address fragility in the PBA by adding a new fragility index in the needs component of the formula as follows:

$$A = CPA^{4.125} \times GNIPC^{-0.125} \times Pop^1 \times AIDI^{-0.25} \times (New\ Index)^\gamma \quad (3)$$

where γ is an exponent applied on the new index (see paragraph 2.4).

Indices for Consideration

- 2.3 A number of indices measuring state of fragility² can be considered (see Annex I). Whereas some of these indices focus exclusively on specific dimensions of fragility such as security, others are more extensive and cover dimensions including political, economic, natural, demographic and social factors.
- 2.4 These indices were assessed for their simplicity, and how close they are to the Bank's own definition of fragility, which particularly emphasises economic, political, social and security dimensions. Three indices were selected: the State Fragility Index (SFI), the Fragile States Index (FSI), and the Economic Vulnerability Index (EVI). All three indices are regularly updated for ADF-eligible countries. The three indices were standardized between 0 and 100. In conducting the simulations, the

¹ See, Bank Group strategy for Addressing Fragility and Building Resilience in Africa 2014–2019 (ADF/BD/WP/2014/30/Rev.2).

² Some of the more widely used ones include the Bertelsmann Transformation Index (BTI) by the Bertelsmann Stiftung, the Country Indicators for Foreign Policy Fragility Index by Carlton University, the ND-GAIN index by the University of Notre Dame, the UN Environment Program's Environmental Vulnerability Index, the Fragile State Index by the Fund for Peace, the Index of State Weakness in the Developing World by the Brookings Institution, the Economic Vulnerability Index by the Committee for Development Policy of the United Nations Economic and Social Council (built with contribution of FERDI), and the State Fragility Index by the Center for Systemic Peace.

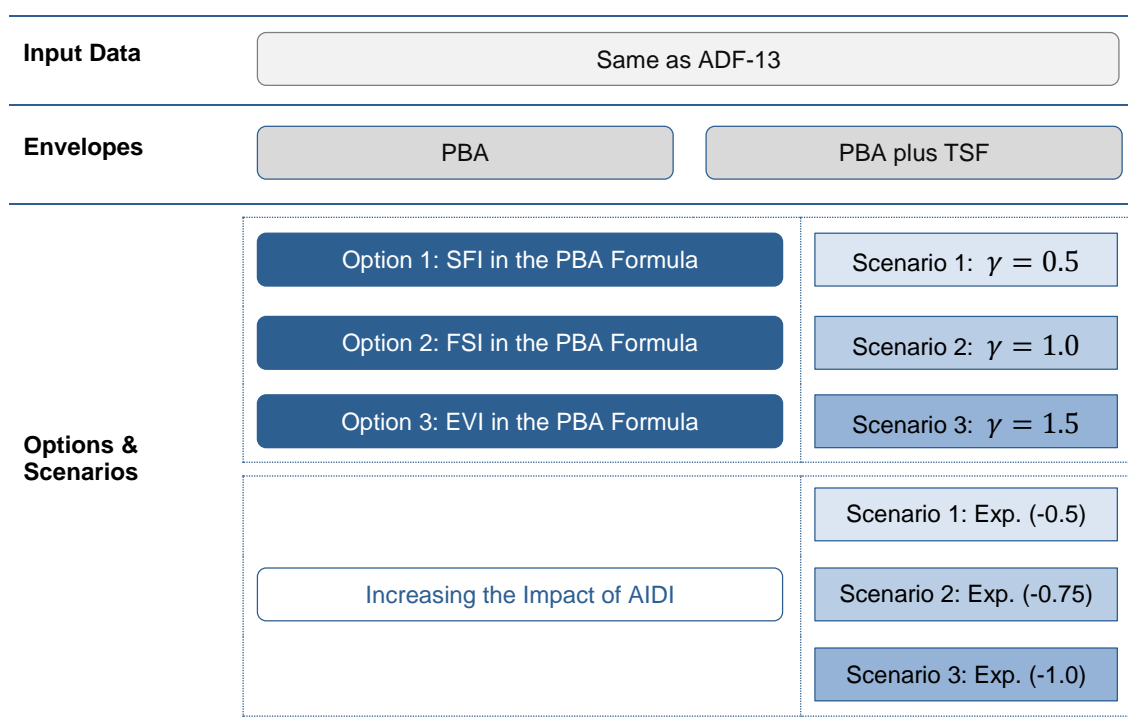
exponent γ in equation (3) was set at 0.5, 1.0, and 1.5. For each scenario, we used a 3-year moving average of the index to avoid excessive volatility.

- 2.5 We recall that the PBA formula was amended during ADF-13 by including the AIDI with an exponent of -0.25. It turns out that the AIDI is highly correlated with fragility and could be used as a proxy in this regard. This can be explained in part by the fact that countries with an infrastructure gap are generally landlocked; conflict affected; or experiencing post-conflict situations or transition processes that accentuate vulnerability. We therefore explored the extent to which the allocations would vary if we raise the AIDI impact by decreasing its exponent to -0.5, -0.75, and -1.0.
- 2.6 For the sake of clarity, the remainder of this note reports on scenario 2 for each option, i.e. the ones where the new indices (SFI, FSI, and EVI) are raised to the exponent of 1.0 and the one where the AIDI is raised to the exponent of -0.75. The remaining scenarios are in annexes.

Methodology

- 2.7 Our baseline scenario uses the same input data and PBA envelopes as ADF-13. We also considered, for each option, a second round of simulations whereby the TSF envelope is added to resources available for allocation under the PBA framework (see Figure 1). While running the simulations, the choice of the exponents was guided by the need to preserve performance as the bedrock of the PBA. Currently, the share of PBA resources for the 16 countries in the top two quintiles of the CPA is 68.5 percent. For the purpose of these simulations, this PBA share is set at a minimum of 65 percent.

Figure 1: Explored Simulations



- 2.8 We use five criteria to assess the outcomes of each option: (i) clarity and simplicity of the index; (ii) data availability and frequency; (iii) variation in allocations; (iv) impact on the relationship between PBA allocations and country performance; and (v) impact on the PBAs of the 18 fragile states eligible for the TSF. A summary evaluation of the first two criteria is in Annex I. The next section highlights how resources are reallocated for each of the considered options and discusses the outcomes of the simulations dealing with the three remaining criteria.

3. Results of Simulations

Variation in Allocations

- 3.1 Figure 2 provides the relative variations of PBAs generated by each of the options. For the first two options (SFI and FSI), most of the increase would benefit countries with medium-sized allocations while decreases would mainly affect the largest countries. Countries with the smallest allocation would not be significantly affected. Among these, allocations of 5 TSF-eligible countries would

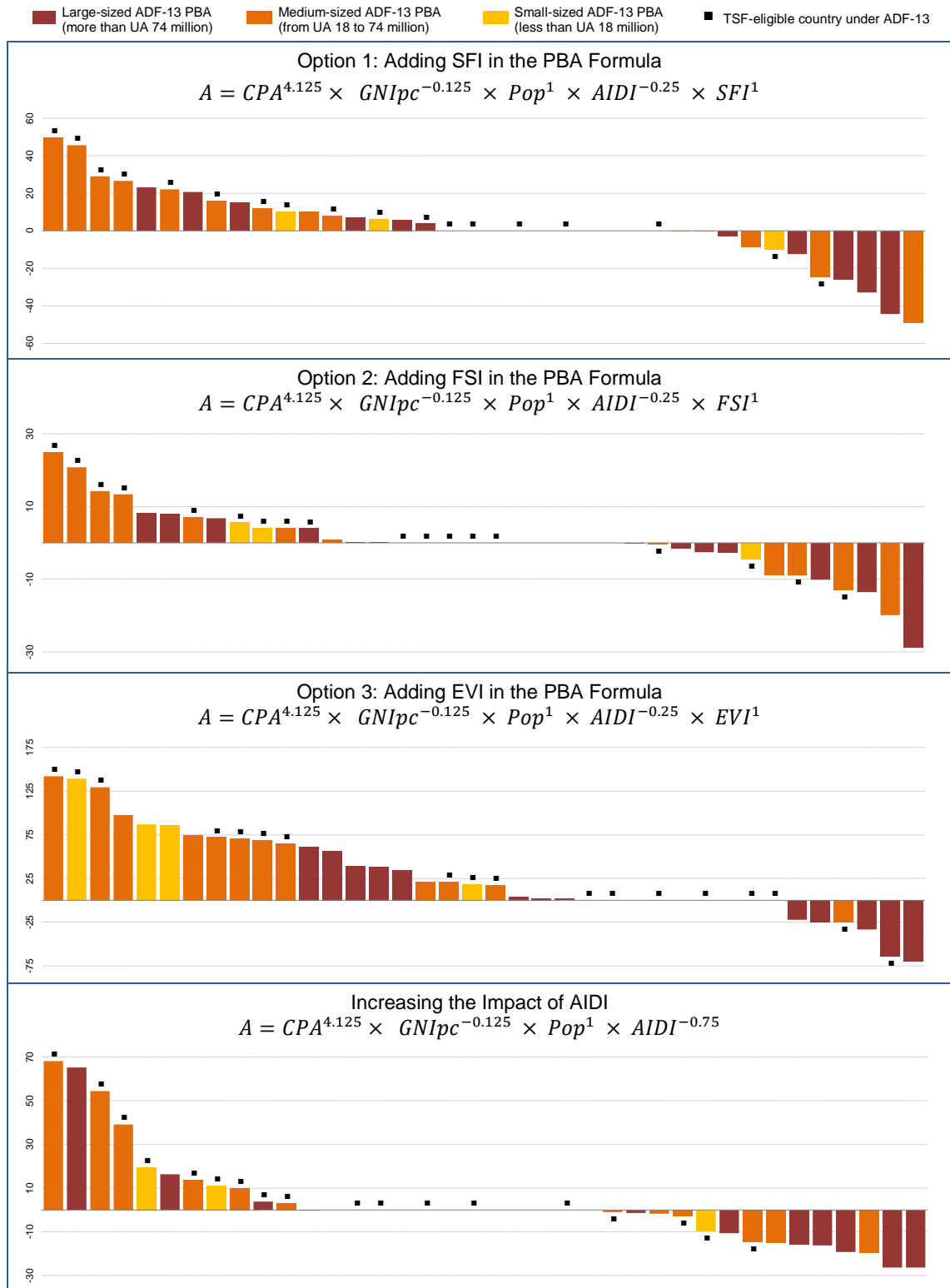
remain unchanged. It is also interesting to note that positive and negative variations in individual PBAs would be similar in absolute terms under these two options.

- 3.2 For the EVI option, the impact is significantly higher than for the two earlier options. In effect, countries with positive PBA variations would average 58.7 percent, whereas those with negative variations average -40.1 percent. In addition, unlike the SFI and the FSI, the positive variations of PBAs are significantly greater than negative ones in absolute terms.
- 3.3 When decreasing the AIDI exponent in the PBA formula, the average increase for countries with positive variations is 23.5 percent, while the negative variations average -12 percent. The strongest positive variations take place among countries with medium and small-sized PBAs, of which 9 are eligible for the TSF. While the negative variations significantly affect the largest allocations, most of the smallest allocations are only insignificantly affected, of which 5 are eligible for the TSF.
- 3.4 As for the redistribution effect of resources, while the SFI and the AIDI redistribute around UA 200 million (UA 212.45 million for the SFI and UA 192.61 million for the AIDI), the redistribution through the EVI would be relatively high exceeding UA 600 million per cycle. The redistributive effect of the FSI is the lowest with UA 95.96 million redirected from higher to lower allocations as compared to the baseline scenario.
- 3.5 Annex II and Annex III provide extensive details on, redistribution effects and individual PBA variations generated by the different options within the various scenarios.

Impact on Performance

- 3.6 The addition of a new fragility index in the PBA formula under scenario 2 would not significantly distort the relationship between performance and the size of allocations when compared to the baseline scenario. As highlighted in Table 1, each of the SFI, FSI and EVI, when introduced in the PBA system with an exponent of 1.0, would direct more than 66 percent of the allocated PBA resources to the 16 best CPA performers (top two quintiles). The same finding also applies when the AIDI exponent is reduced to -0.75: countries in the two top-performing quintiles would get more than 65 percent of the allocated PBA.
- 3.7 In general, the various simulated scenarios of our explored options would preserve the alignment between performance and allocations by securing more than 65 percent of allocations to the top two CPA quintiles of countries. This is explained by the fact that a significant part of the redistribution would take place from the first to the second performance quintile.
- 3.8 More details on PBA distribution by CPA quintiles, along with all explored simulations, are in Annex IV.

Figure 2: Individual PBA Variations (in percentage)



Impact on TSF-Eligible Countries

3.9 As shown in Table 1, the addition of the SFI, the FSI, and the EVI in the PBA formula will lead to similar increases in the share of PBAs going to TSF-eligible countries. For instance, the SFI option would channel 30.6 percent of allocated PBAs to countries eligible to the TSF compared to 27.4 in the baseline scenario. Between 9 and 11 TSF-eligible countries get higher allocations, compared to the baseline scenario, and between 2 and 4 countries get lower allocations.

Table 1: Key Results of the Explored Simulations

		Baseline	Option 1: SFI	Option 2: FSI	Option 3: EVI	AIDI
		ADF-13	Scenario 2 $\gamma = 1.0$	Scenario 2 $\gamma = 1.0$	Scenario 2 $\gamma = 1.0$	Scenario 2 Exp. (-0.75)
Redistributed resources (UA Million)		NA	212.45	95.96	611.79	192.61
Share of PBAs in top 2 CPA quintiles (Percentage)		68.6	66.3	67.5	67.6	65.6
PBAs to TSF countries (UA Million)		816.39	908.16	885.98	843.74	893.30
Share of PBAs to TSF countries (Percentage)		27.4	30.6	28.8	28.5	30.1
Impact on TSF countries whose PBA increase	No.	NA	11	9	10	9
	UA MM	NA	9.82	5.91	22.79	10.09
Impact on TSF countries whose PBA decrease	No.	NA	2	4	2	4
	UA MM	NA	-8.12	-3.40	-100.29	-3.48

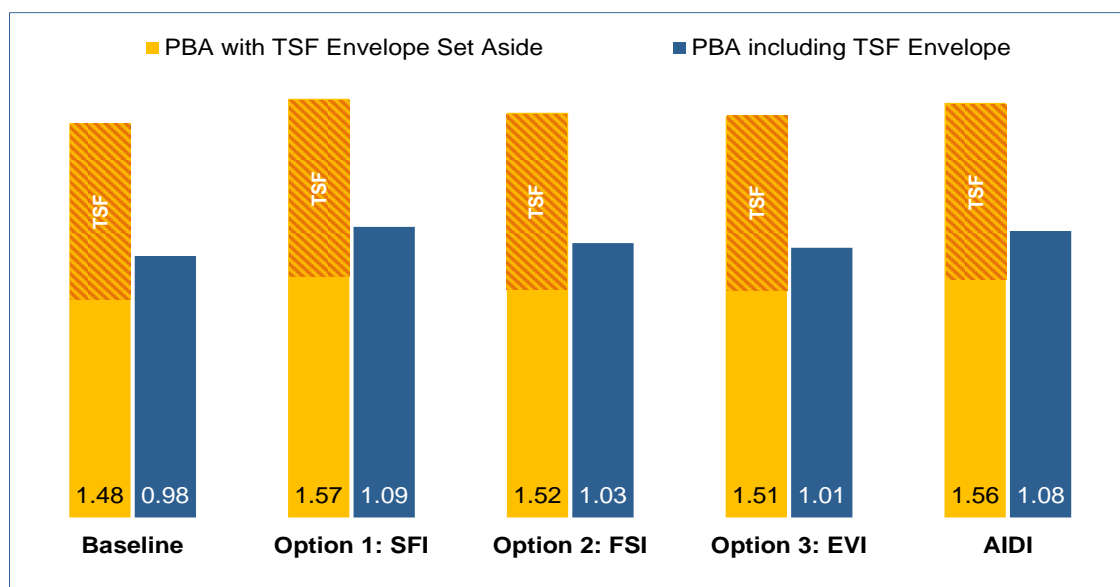
Note: NA = not applicable

- 3.10 The AIDI would also lead to similar results when compared to the three considered options. In effect, when reducing its exponent from -0.25 to -0.75 in the current PBA formula, the AIDI would provide 30.1 percent of the allocated PBAs to TSF-eligible countries, of which 9 should have an average increase of UA 10 million over the cycle as compared to ADF-13, and 4 an average decrease of UA 3 million.
- 3.11 Meanwhile, it is interesting to note that the EVI, due its high redistribution effect, would allocate an additional UA +22.79 million on average for each of the 10 TSF-eligible countries whose PBA will increase. However, under this option, two TSF-eligible countries would see their PBA fall by a significant amount averaging UA 100 million per cycle.

Including the TSF Envelope into the PBA System

- 3.12 In the case of the proposed changes in the PBA formula, integrating the TSF envelope with PBA resources would not lead to channelling more resources to TSF-eligible countries (Figure 3). Under the baseline scenario total PBAs flowing to TSF-eligible countries would be around UA 497 million lower than in the current configuration which considers the TSF as a set aside envelope. None of the explored options would compensate for that reduction. For instance, with the EVI option, TSF-eligible countries would likely lose UA 493 million of their total ADF resources.

Figure 3: Share of Resources Flowing to TSF-Eligible Countries (UA Billion)



4. Conclusion

- 4.1 This note considered how fragility could explicitly be included in the PBA formula. We considered four options through differentiated simulations, for which the main results are summarized in Annex VI. The first three options involved introducing new indices that capture various aspects of fragility into the formula, while a fourth option used the AIDI in the existing formula as a proxy for fragility. Whereas none of the options fundamentally alter the underlying performance principle of the PBA system, the effects suggested by the simulations using the first three options could be replicated by increasing the impact of the AIDI in the current formula. Moreover, in the scenarios considered, integrating the TSF envelope with PBA resources would not lead to channelling more resources to TSF-eligible countries.

Annex I: Comparative Summary of Fragility Indices

Index	Scope of the Index	Clarity and Simplicity	Frequency and publication (as at Feb. 2016)	Data Availability
State Fragility Index <i>by the Center for Systemic Peace</i>	The index aims at measuring the degree of fragility on the basis of a country's ability to deal with conflict; make and implement public policy; deliver essential services and its systemic resilience in maintaining system coherence, cohesion and quality of life; responding effectively to challenges and crises; and sustaining progressive development.	The index aggregates eight indicators measuring two qualities of state performance, namely effectiveness and legitimacy, across four areas each: security, political, economic and social. It also includes qualitative indicators on: armed conflict; regime type; net oil production or consumption; and regional effects. On the basis of this measurement framework, a rating ranging from 0 (least fragile) to 25 (most fragile) is produced, indicating the degree of fragility of a country and its ability to: deal with conflict; make and implement public policy; deliver essential services and its systemic resilience in maintaining system coherence, cohesion and quality of life; responding effectively to challenges and crises; and sustaining progressive development.	Produced annually for 167 countries. The latest published data is for 2014.	Available online on the Center for Systemic Peace web site (http://www.systemicpeace.org/) for all ADF-eligible countries except Sao Tomé & Príncipe.
Fragile State Index <i>by the Fund for Peace</i>	The purpose of the index is to measure pressures that states can experience and identify – at social, economic and political level – when these pressures could push a state towards the brink of failure.	The index is built from a wide range of data sources aggregated around 12 key social, economic, and political indicators. The purpose of the index is to measure various kinds of pressures that can push a state towards the brink of failure. The social indicators assess the state capacity to provide security and protect citizens from such things as demographic pressures (disease and natural disasters); population displacement; tension and violence between groups; and such phenomena as human capital flight. The economic component tries to capture unevenness of economic development related to ethnic, religious, or regional groups in a given country. It also attempts to measure how much poverty and economic decline can strain the ability of a state to provide its citizens equal access to economic opportunities. Lastly, the political indicators attempt to measure a state's legitimacy and its capacity to: fight against corruption; deliver public services such as health provision, education, and sanitation; protect human rights and rule of law; keep the monopoly on using legitimate force of the security apparatus; protect national leaders; and meet its international and domestic obligations away from external interventions. Data ranges between 0 and 120 where a higher score indicates a higher fragility situation.	Produced annually for 178 nations. The latest published evaluation is for 2015.	Available online on the Fund for Peace web site (http://fsi.fundforpeace.org/) for all ADF countries.
Economic Vulnerability Index <i>by the Committee for Development Policy of the United Nations Economic and Social Council with the contribution of FERDI</i>	The index aims at identifying countries that are the most disadvantaged by structural handicaps to growth. It measures structural economic vulnerability which can result from exposure to external shocks such as volatile world commodity prices or international fluctuations in interest rates and from exogenous factors such as remoteness.	The index comprises eight indicators: (i) population size; (ii) remoteness; (iii) merchandise export concentration; (iv) share of agriculture, forestry and fisheries in the economy; (v) share of population in low elevated coastal zones; (vi) instability of exports of goods and services; (vii) victims of natural disasters; (viii) instability of agricultural production. Data ranges between 0 and 100 where a higher value indicates a situation of a higher fragility.	Compiled every three years . The latest published data is for 2011.	Available online of the FERDI web site (http://www.ferdi.fr/) for all ADF-eligible countries except South Sudan.
Africa Infrastructure Development Index <i>by the African Development Bank</i>	The index measure the level of infrastructure development in Africa through access to basic commodities related to transport, energy, ICTs, and sanitation.	The index provides consolidated and comparative information on the status and progress of infrastructure development in African countries, using four well known indicators measuring access to transport, electricity, ICTs, and water and sanitation. It has a clear and simple methodology for collecting and compiling information. Data ranges between 0 and 100 where a higher values expresses a better	Compiled annually for the 54 African countries. The latest published data is of 2013.	Available on the African Development Bank web site (http://www.afdb.org/) for all African countries.

		infrastructure development.		
Bertelsmann Transformation Index (BTI) <i>by the Bertelsmann Stiftung</i>	It evaluates whether and how countries in transition are steering social change toward democracy and a market economy. The status index identifies where each country stands on its path toward democracy under the rule of law and a market economy anchored in principles of social justice.	The status index of the BTI aggregates a set of 12 criteria along with two analytic dimensions: one assessing the state of political transformation, the other the state of economic transformation. Data ranges from 1 to 10 where a lower value expresses a worse situation.	Produced on a biannual basis. The latest published evaluation is of 2014.	Available online for 129 countries on the BTI web site (http://www.bti-project.org/). For ADF-eligible countries, Comoros, Djibouti, Gambia, Guinea-Bissau, and Sao Tome & Principe are not covered by the index.
Country Indicators for Foreign Policy (CIFP) Fragility Index <i>by Carleton University</i>	The CIFP fragility index is based on the idea that a state needs to exhibit three fundamental properties: Authority, Legitimacy, and Capacity (ALC). Weaknesses in one or more of these dimensions have an impact on the overall fragility of the country.	In addition to the ALC assessment framework, the index is based on structural indicators grouped into six clusters capturing facets of state fragility and robustness: Governance, Economics, Security and Crime, Human Development, Demography, and Environment. Data ranges from 1 to 9 where a lower score translates situation of lower fragility.	Compiled annually for 200 countries. The latest published data is for 2012.	Available online on the web site of Carleton University (http://www4.carleton.ca/cifp/) for all ADF-eligible countries . However data is not available on portable database format (Excel) and should be extracted manually from the HTML web page.
ND-GAIN index <i>by the University of Notre Dame</i>	The ND-GAIN Country Index summarizes a country's vulnerability to climate change and other global challenges in combination with its readiness to improve resilience. It aims at helping businesses and the public sector better prioritize investments for a more efficient response to the immediate global challenges ahead.	The index is composed of a Vulnerability score and a Readiness score. On vulnerability, it considers 36 indicators on vulnerability structured through six life-supporting sectors – food, water, health, ecosystem service, human habitat and infrastructure. Readiness is measured through 9 indicators structured within three components – economic readiness, governance readiness and social readiness. Data ranges from 0 to 100 where a higher score indicates better situation.	Produced annually for 192 countries. The latest published data is for 2014.	Available online on the ND-GAIN web site (http://index.gain.org/) for all ADF-eligible countries except South Sudan.
Environmental Vulnerability Index <i>by South Pacific Applied Geoscience Commission (SOPAC) and the UN Environment Programme (UNEP)</i>	This index reflects the status of a country's environmental vulnerability, which refers to the extent to which the natural environment is prone to damage and degradation. It does not address the vulnerability of the social, cultural or economic systems, and not the environment dominated by human systems (e.g. cities, farms).	The index is based on 50 indicators structured around components focusing on ecosystem integrity and how it is threatened by anthropogenic and natural hazards. More specifically, each indicator is classified into a range of sub-indices including: Climate Change; Biodiversity; Water; Agriculture and fisheries; Human health aspects; Desertification; and Exposure to Natural disasters. Data ranges between 1 and 7 where a higher score indicates extreme vulnerability.	Produced annually in theory . However, the latest published data is for 2004.	Available online on the EVI web site (http://www.vulnerabilityindex.net/) for all ADF-eligible countries except South Sudan. Data is not available on portable database format (Excel) and should be extracted manually from PDF reports.
Index of State Weakness in the Developing World <i>by the Brookings Institution</i>	The objective of the index is to capture weakness of countries according to their relative performance in four spheres: economic, political, security, and social welfare. It defines a weak state as a country that lack the essential capacity and/or will to fulfill four sets of critical government responsibilities: fostering an environment conducive to sustainable and equitable economic growth; establishing and maintaining legitimate, transparent, and accountable political institutions; securing their populations from violent conflict and controlling their territory; and meeting the basic human needs of their population.	The index is based on 20 indicators classified within 4 baskets: economic; political; security; and social welfare. While the economic basket assess the state's ability to provide its citizens with a stable economic environment, the political basket assess the quality of political institutions and the extent to which citizens accept the system of governance. The security system measures whether the state is able to provide physical security to its citizens; and the social welfare basket evaluates how well the state could satisfy their basic human needs. Data ranges from 0 to 10 where a higher score expresses a lower weakness status.	Produced annually in theory for 141 developing nations. However, the latest published data is of 2008.	Available online on the Brookings web site (http://www.brookings.edu/) for all ADF-eligible countries except South Sudan. Data is not available on portable database format (Excel) and should be extracted manually from PDF reports.

Annex II: Impact Summary of Explored Simulations

Table A1: Impact Summary of the SFI

		Scenario 1 SFI Exp. (+0.5)		Scenario 2 SFI Exp. (+1.0)		Scenario 3 SFI Exp. (+1.5)	
		No.	Avg. (UA MM)	No.	Avg. (UA MM)	No.	Avg. (UA MM)
Higher Allocation	<i>TSF Countries</i>	11	+5.24	11	+9.82	11	+15.35
	<i>Non TSF Countries</i>	6	+8.60	6	+17.35	7	+23.52
	Total	17	+6.43	17	+12.48	18	+18.53
No Change	<i>TSF Countries</i>	5	-	5	-	5	-
	<i>Non TSF Countries</i>	5	-	5	-	5	-
	Total	10	-	10	-	10	-
Lower Allocation	<i>TSF Countries</i>	2	-4.23	2	-8.12	2	-11.20
	<i>Non TSF Countries</i>	9	-12.02	9	-23.38	8	-41.83
	Total	11	-10.60	11	-20.61	10	-35.71
Redistributed Resources (UA Million)		109.48		212.45		334.08	

Note: Impact of each simulation is measured against the baseline scenario.

The results suggest that with the inclusion of SFI in the PBA formula, the total redistribution of PBA resources would have varied between UA 109 million to UA 334 million during the cycle, benefiting 17 to 19 countries, of which 11 are eligible for the TSF. For scenario 2, the impact on the allocations of these 11 TSF-eligible countries would be UA 9.82 million per cycle. While 5 of the TSF-eligible countries would see their minimum PBA unchanged, 2 of them would experience a decrease.

Table A2: Impact Summary of the FSI

		Scenario 1 FSI Exp. (+0.5)		Scenario 2 FSI Exp. (+1.0)		Scenario 3 FSI Exp. (+1.5)	
		No.	Avg. (UA MM)	No.	Avg. (UA MM)	No.	Avg. (UA MM)
Higher Allocation	<i>TSF Countries</i>	9	+3.44	9	+5.91	9	+8.48
	<i>Non TSF Countries</i>	6	+3.32	6	+7.09	6	+10.51
	Total	15	+3.39	15	+6.38	15	+9.29
No Change	<i>TSF Countries</i>	5	-	5	-	5	-
	<i>Non TSF Countries</i>	5	-	5	-	5	-
	Total	10	-	10	-	10	-
Lower Allocation	<i>TSF Countries</i>	4	-1.79	4	-3.40	4	-5.09
	<i>Non TSF Countries</i>	9	-5.18	9	-9.71	9	-14.06
	Total	13	-4.14	13	-7.77	13	-11.30
Redistributed Resources (UA Million)		51.05		95.96		139.60	

Note: Impact of each simulation is measured against the baseline scenario.

With the addition of the FSI in the PBA formula, a redistribution of resources would vary from UA 51.05 million to UA 139.60 million per cycle. The results of the simulations suggest that, for the three scenarios, 15 countries would receive higher allocations, of which 9 are eligible for the TSF. The additional resources going to TSF-eligible countries would be UA +5.91 million per cycle under scenario 2. There would be no impact on the allocations of 5 TSF and 5 non TSF countries, which would be maintained at the current UA 15 million minimum ADF allocation per cycle. However, among the 13 countries that would be impacted by lower allocations, 4 would be TSF-eligible countries with an average decrease of UA -1.79 million, UA -3.40 million, and UA -5.09 million per cycle, respectively for scenario 1, 2, and 3.

Table A3: Impact Summary of the EVI

		Scenario 1 EVI Exp. (+0.5)		Scenario 2 EVI Exp. (+1.0)		Scenario 3 EVI Exp. (+1.5)	
		No.	Avg. (UA MM)	No.	Avg. (UA MM)	No.	Avg. (UA MM)
Higher Allocation	<i>TSF Countries</i>	10	+8.45	10	+22.79	12	+28.19
	<i>Non TSF Countries</i>	11	+12.11	13	+28.61	12	+44.33
	Total	21	+10.37	23	26.08	24	+36.26
No Change	<i>TSF Countries</i>	6	-	6	-	4	-
	<i>Non TSF Countries</i>	3	-	3	-	2	-
	Total	9	-	9	-	6	-
Lower Allocation	<i>TSF Countries</i>	2	-63.19	2	-100.29	2	-128.59
	<i>Non TSF Countries</i>	6	-15.55	4	-103.99	4	-107.57
	Total	8	-27.46	6	-102.76	8	-112.82
Redistributed Resources (UA Million)		223.99		611.79		890.79	

Note: Impact of each simulation is measured against the baseline scenario.

For the three scenarios proposed, the redistributed resources would be relatively high. In fact, they would be much larger than those exhibited by the two previous options involving the SFI and FSI. The redistribution would exceed UA 600 million per cycle for scenarios 2 and 3. Our simulations suggest that among the 21-24 higher PBA allocations, 10-12 of them would go to TSF-eligible countries. While, the average allocation increase for better performing countries stands at UA +8.45 million, UA +22.79 million, and UA +28.19 million per cycle for scenario 1, 2, and 3 respectively, TSF-eligible countries would get less additional resources than non TSF-eligible countries. Furthermore, whereas 6-8 TSF-eligible countries would only retain the minimum allocation (UA 15 million per cycle), 2 TSF-eligible countries could experience significant decreases per cycle.

Table A4: Impact Summary of the AIDI

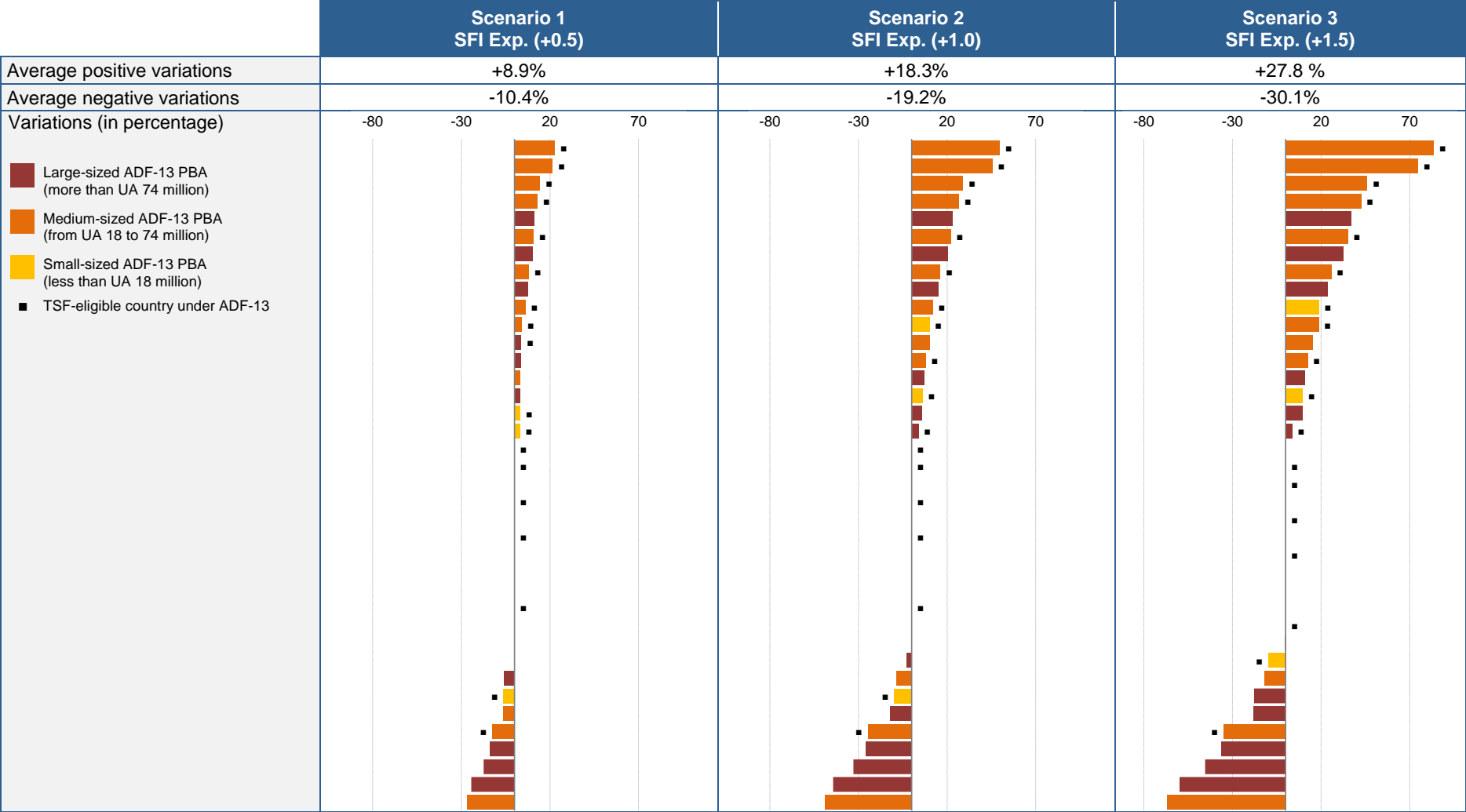
		Scenario 1 AIDI Exp. (-0.5)		Scenario 2 AIDI Exp. (-0.75)		Scenario 3 AIDI Exp. (-1.0)	
		No.	Avg. (UA MM)	No.	Avg. (UA MM)	No.	Avg. (UA MM)
Higher Allocation	<i>TSF Countries</i>	9	+5.49	9	+10.09	9	+14.72
	<i>Non TSF Countries</i>	5	+9.02	4	+24.45	4	+39.10
	Total	14	+6.75	13	+14.51	13	+22.22
No Change	<i>TSF Countries</i>	5	-	5	-	5	-
	<i>Non TSF Countries</i>	5	-	5	-	5	-
	Total	10	-	10	-	10	-
Lower Allocation	<i>TSF Countries</i>	4	-1.59	4	-3.48	4	-5.86
	<i>Non TSF Countries</i>	10	-9.45	11	-17.00	11	-25.80
	Total	14	-7.21	15	-13.39	15	-20.48
Redistributed Resources (UA Million)		97.06		192.61		293.47	

Note: Impact of each simulation is measured against the baseline scenario.

Some 13-14 countries would experience higher PBAs due to their infrastructure deficit. For the three selected scenarios, out of the 18 TSF-eligible countries, 9 would benefit from a higher PBA as compared to the baseline scenario. In the meantime, 5 of them would only retain the minimum allocation (UA 15 million per cycle), while 4 would receive lower PBAs. Decreasing the AIDI exponent would have an overall distributive effect of UA 97.06 million, UA 192.61 million, and UA 293.47 million during the cycle, respectively, in scenario 1, 2, and 3. In effect, this would translate into a positive average impact on the 9 TSF-eligible countries with increasing allocations averaging at UA +5.49 million, UA +10.09 million, and UA +14.72 million per cycle under scenario 1, 2, and 3, respectively.

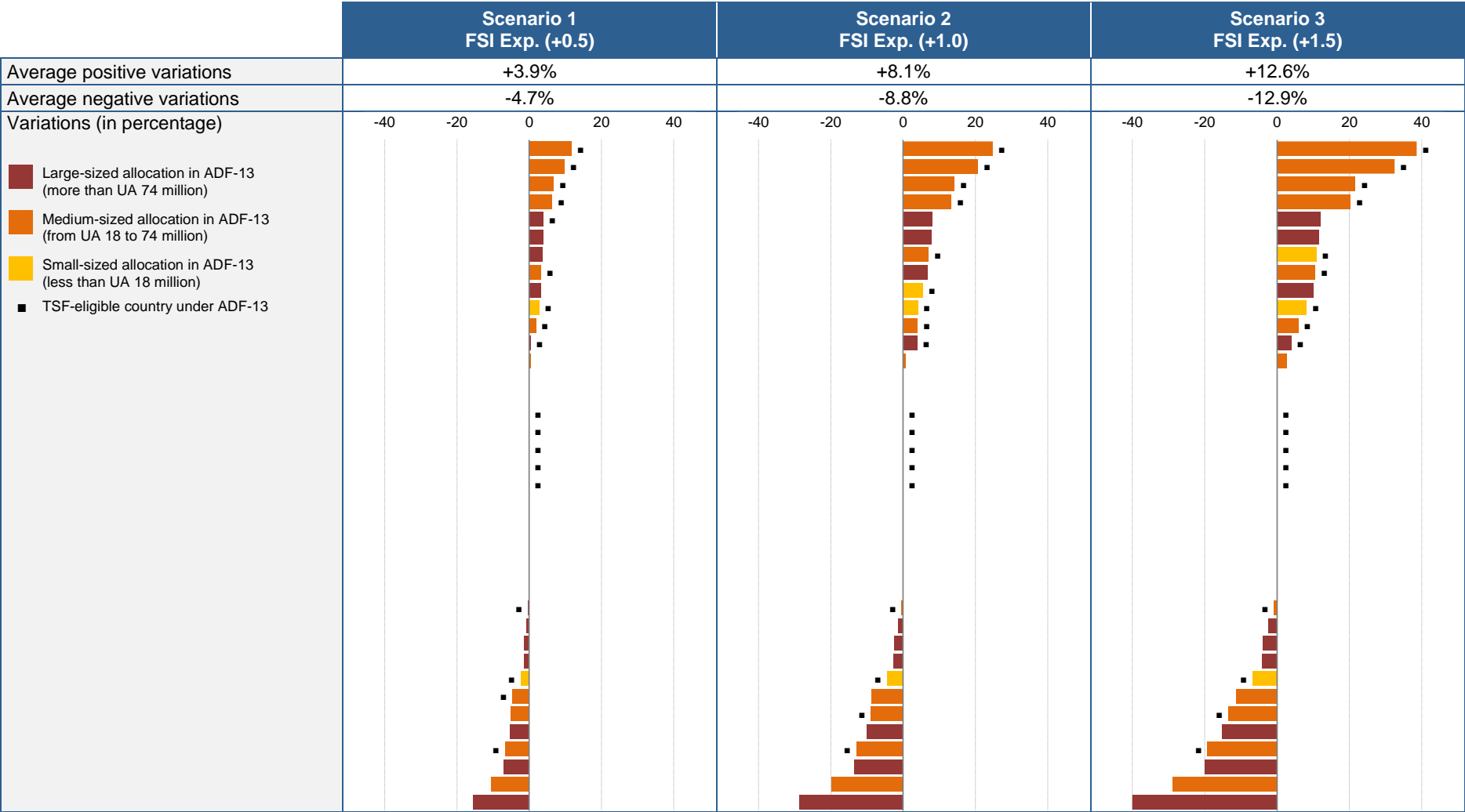
Annex III: Impact of Explored Simulations on Individual PBA Variations

Table B1: Impact of the SFI on Individual PBA Variations



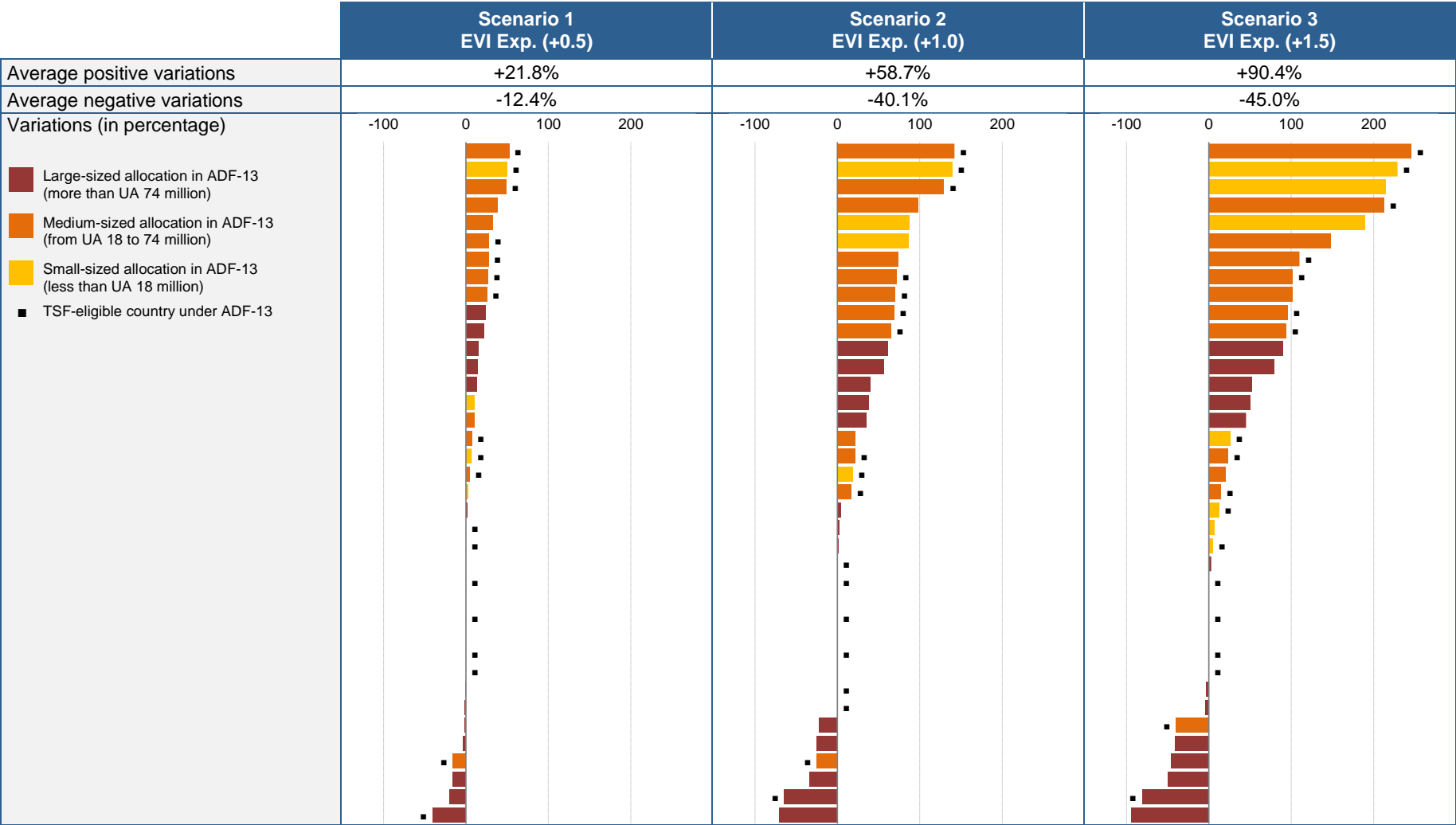
Note: Variations are measured against the baseline scenario.

Table B2: Impact of the FSI on Individual PBA Variations



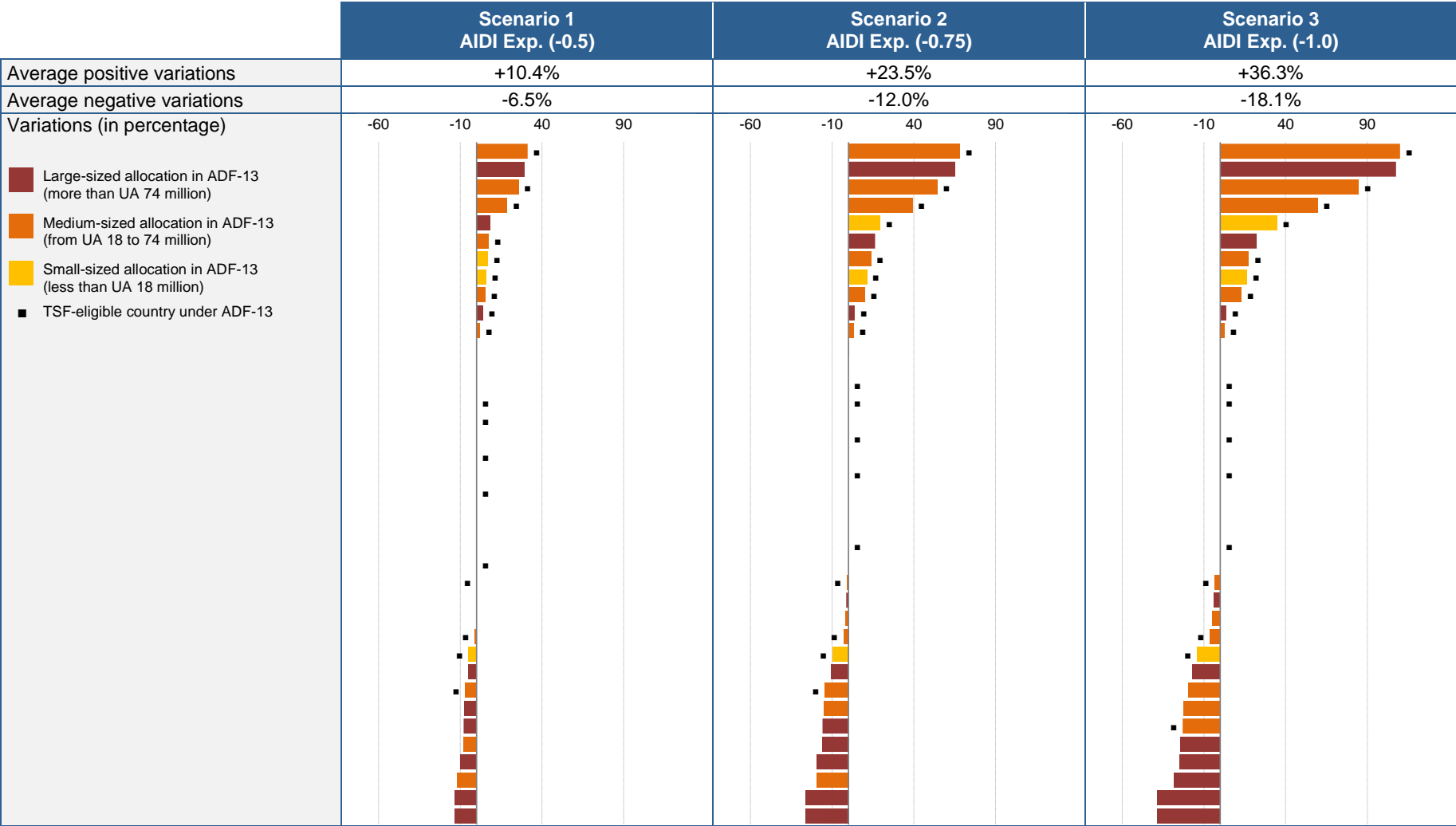
Note: Variations are measured against the baseline scenario.

Table B3: Impact of the EVI on Individual PBA Variations



Note: Variations are measured against the baseline scenario.

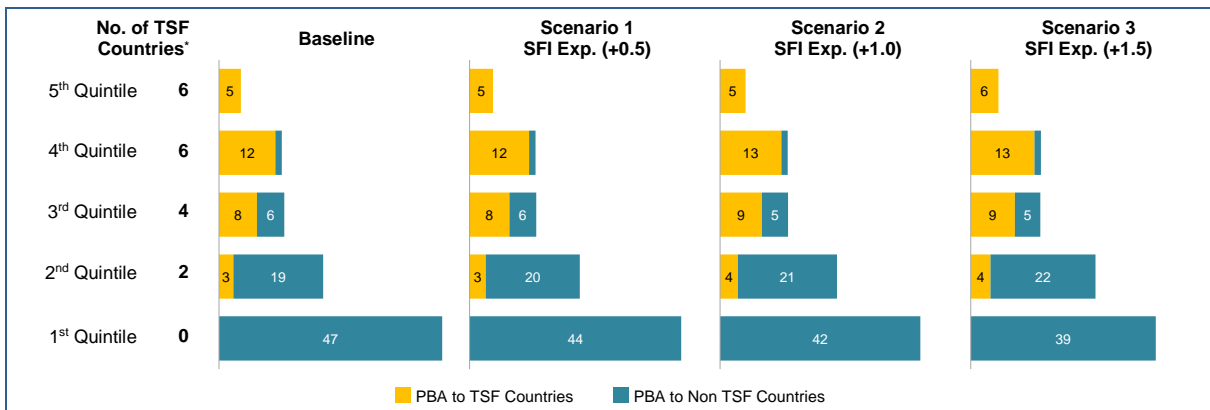
Table B4: Impact of the AIDI on Individual PBA Variations



Note: Variations are measured against the baseline scenario.

Annex IV: Impact of Explored Options on Performance

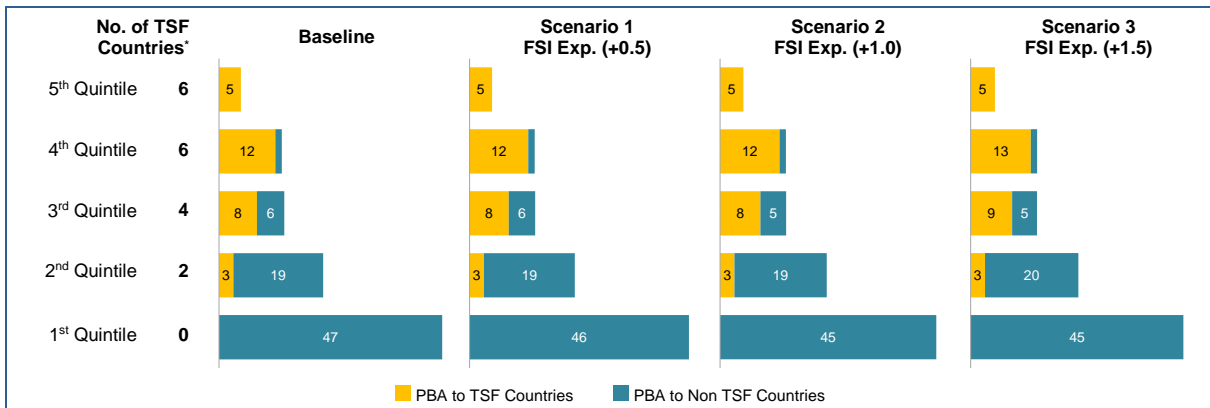
Figure C1: Impact of the SFI on PBA Distribution by CPA Quintiles (in percentage)



* Distribution of TSF countries by quintiles is calculated against the 2016 CPA.

In general, the addition of SFI to the PBA formula would preserve the traditional alignment between performance and allocations. When compared to the baseline scenario, the three scenarios redistribute resources from the first CPA quintile to the second one. More than 65 percent of the PBAs would go to the 16 top performing countries.

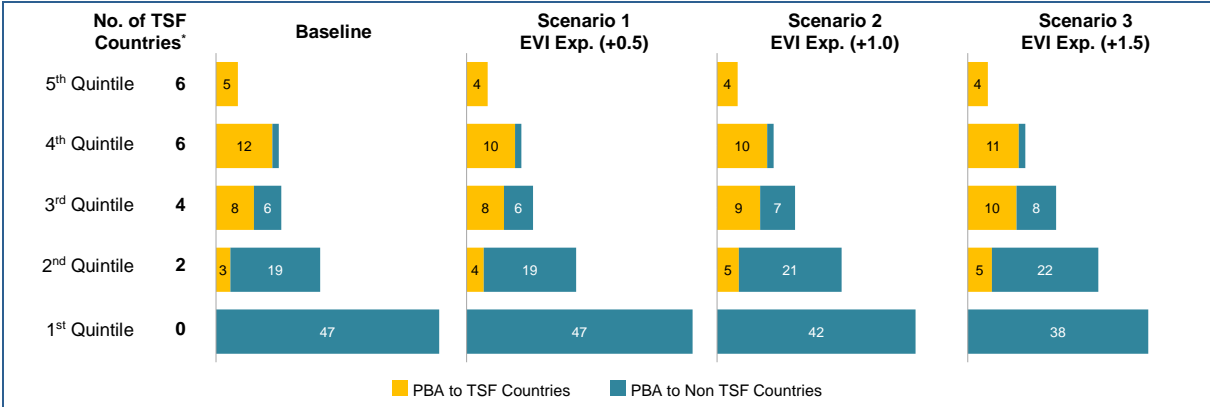
Figure C2: Impact of the FSI on PBA Distribution by CPA Quintiles (in percentage)



* Distribution of TSF countries by quintiles is calculated against the 2016 CPA.

Data suggests that, under the three scenarios, adding the FSI to the existing PBA formula would redistribute resources away from the first to the second CPA quintile, which would in turn allow for the retention of more than 65 percent of the allocations for the 16 best performing countries. The redistribution effect would be more significant under scenario 3, which applies an exponent of (+1.5), with the top two quintiles losing around 2 percent of the resources.

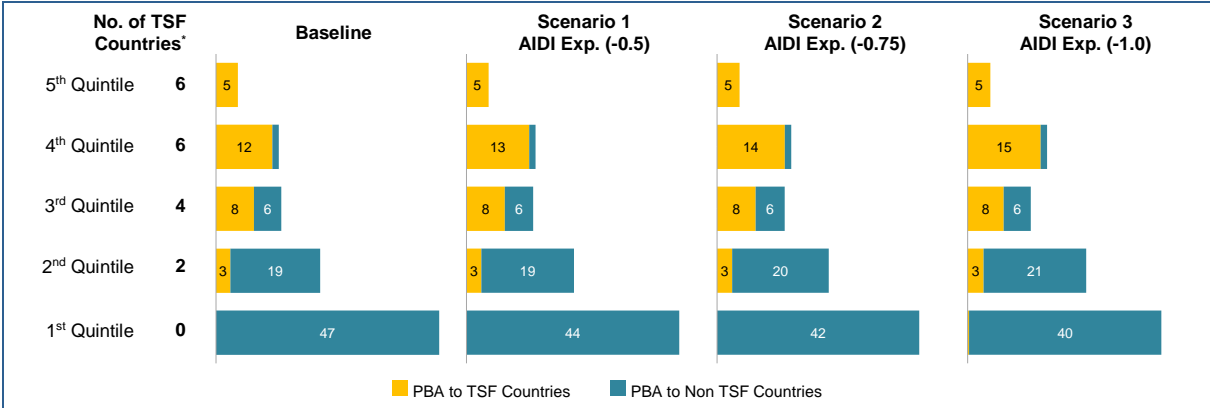
Figure C3: Impact of the EVI on PBA Distribution by CPA Quintiles (in percentage)



* Distribution of TSF countries by quintiles is calculated against the 2016 CPA.

Based on the three simulated scenarios, adding the EVI to the existing formula would result in an allocation of more than 65 percent of the PBAs to the 16 best CPA performers. This is because the resource redistribution would mainly result from the first to the second CPA quintile.

Figure C4: Impact of the AIDI on PBA Distribution by CPA Quintiles (in percentage)

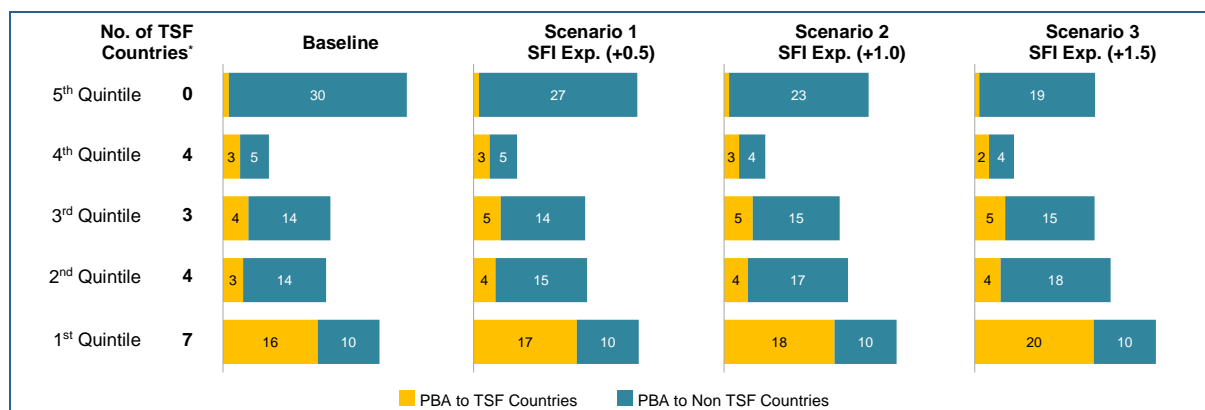


* Distribution of TSF countries by quintiles is calculated against the 2016 CPA.

The decrease of the AIDI exponent does not significantly distort the relationship between performance and the size of allocations when compared to the baseline scenario. For all 3 scenarios, countries in the two top-performing quintiles would capture more than 65 percent of the PBA resources. This is explained by the fact that part of the redistribution will take place from the first to the second quintile.

Annex V: Impact of Explored Options on Fragility Need

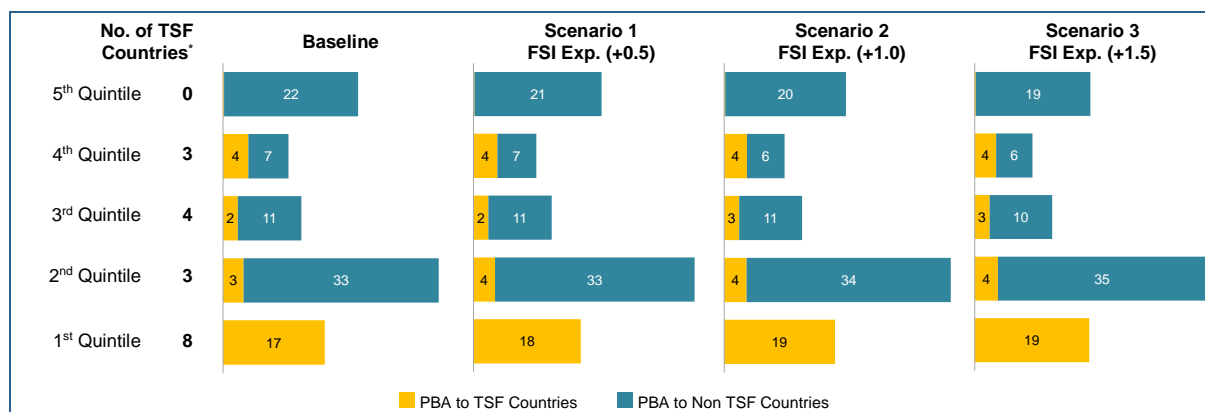
Figure D1: PBA Distribution by SFI Quintiles (in percentage)



* Distribution of TSF countries by quintiles is calculated against the 2012-2014 SFI average.

Under the baseline scenario, around 44 percent of PBA resources would flow to the 16 countries with the highest fragility as measured by the SFI ratings (first and second quintiles). Interestingly, 11 of these 16 countries are currently eligible for the TSF. The introduction of the SFI index in the PBA formula would increase this share to 53 percent for scenario 3. Indeed, while the third and the fourth quintiles would remain stable, the gradual increase of the SFI exponent would transfer resources from the fifth toward the first and second SFI quintiles. TSF-eligible countries in the first quintile would benefit the most from such a redistribution, with a resource share rising from 16 percent under the baseline scenario, to 20 percent under scenario 3. On the other hand, non TSF-eligible countries would capture most of the resources that would be transferred to the fourth quintile.

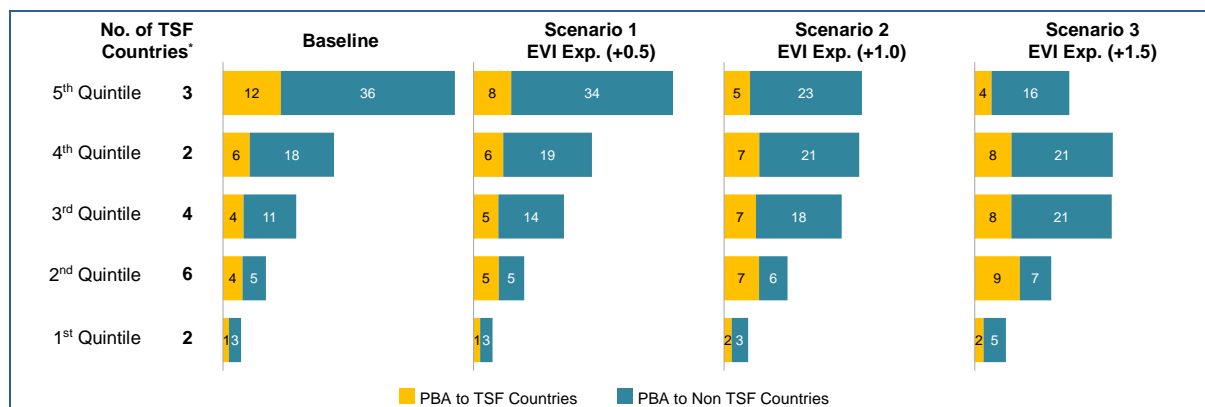
Figure D2: PBA Distribution by FSI Quintiles (in percentage)



* Distribution of TSF countries by quintiles is calculated against the 2013-2015 FSI average.

The 16 most fragile countries, as defined by the FSI, would benefit from 53 percent of the allocated resources under the baseline scenario. The addition of the index in the PBA formula would contribute to increase resources channeled to these countries to around 58 percent under scenario 3, of which 23 percent would go to 11 TSF-eligible countries. It is also interesting to note that the first FSI quintile consists wholly of TSF-eligible countries, while the fifth quintile solely comprises countries that are not eligible for the TSF. Whereas the PBAs flowing to the third FSI quintile would approximately remain constant under the three scenarios, resources would be also redistributed from the fourth and fifth quintiles to the first and second ones, and TSF-eligible countries would be the ones to benefit the most.

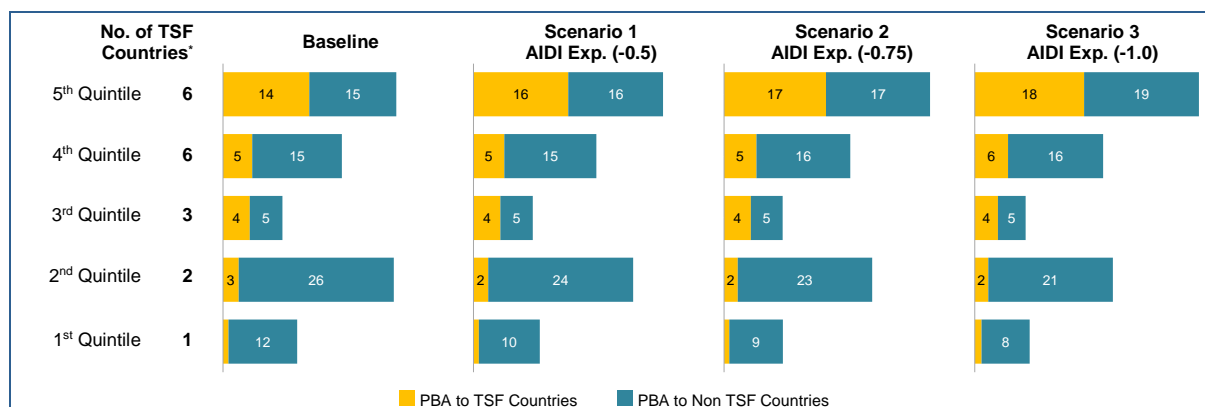
Figure D3: PBA Distribution by EVI Quintiles (in percentage)



* Distribution of TSF countries by quintiles is calculated against the 2009-2011 EVI average.

The breakdown in allocations by EVI quintiles suggests a weak correlation between the index and TSF-eligible countries. In fact, while the 16 least vulnerable countries (fourth and fifth quintiles) as defined by the EVI would receive the bulk of the PBAs with more than 70 percent, only 13 percent of the PBA would be allocated to the 16 most vulnerable (first and second quintiles). Moreover, for all three scenarios, resources would almost be equally redistributed from the fifth to the fourth remaining quintiles with no relevant discrimination between TSF and non-TSF countries.

Figure D4: PBA Distribution by AIDI Quintiles (in percentage)



* Distribution of TSF countries by quintiles is calculated against the 2011-2013 AIDI average.

The breakdown of allocations by AIDI quintiles suggests that approximately 50 percent of PBA resources are already channeled to the 16 least infrastructure developed countries under the baseline scenario. The decrease of the AIDI exponent transfers resources from countries with better infrastructure (first and second quintiles) to those with the biggest infrastructure gap (fifth and fourth quintiles). This would increase the share of PBA resources going to the latter group by up to 59 percent under scenario 3, of which 24 percent would be for TSF-eligible countries.

Annex VI: Impact of Explored Options on Allocations of TSF-Eligible Countries

Figure E1: Impact of the SFI on Allocations of TSF-Eligible Countries

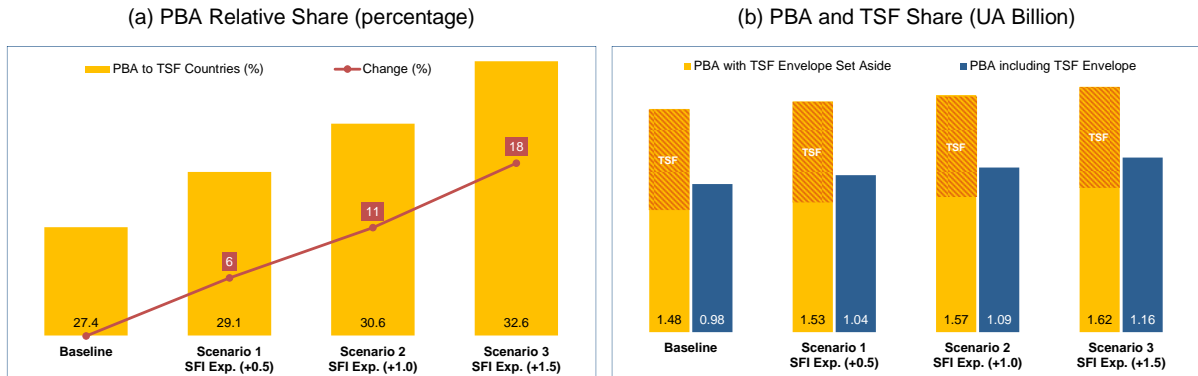


Figure E2: Impact of the FSI on Allocations of TSF-Eligible Countries

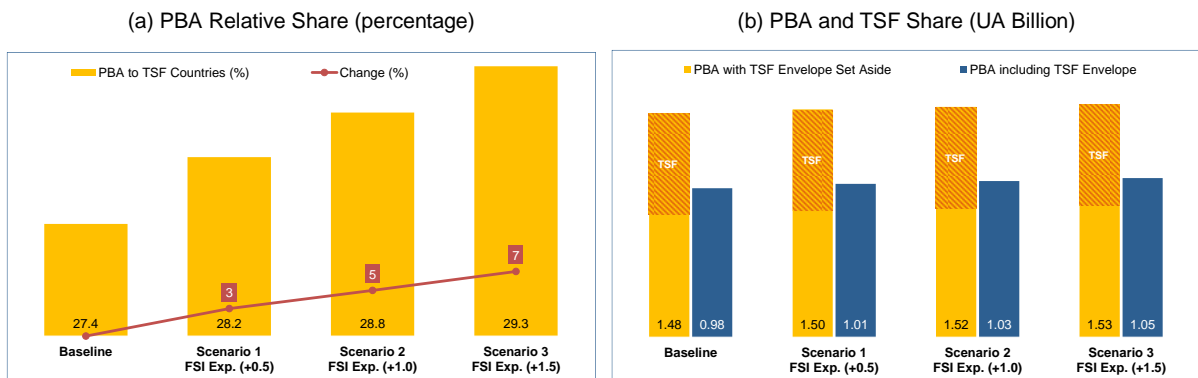


Figure E3: Impact of the EVI on Allocations of TSF-Eligible Countries

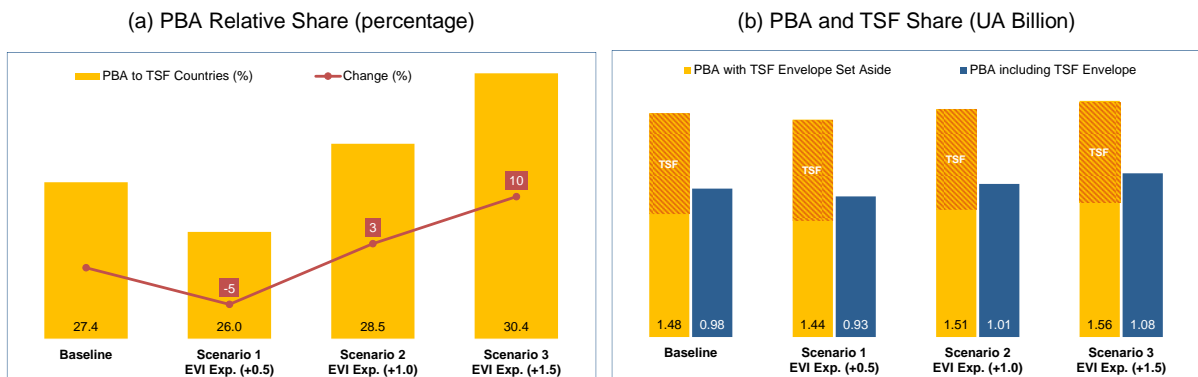


Figure E4: Impact of the AIDI on Allocations of TSF-Eligible Countries

