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The Global Militarization Index (GMI)

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The Global Militarization Index (GMI)

Use of the GMI for evaluating the development orientation of states and regional militarization

Research Report

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Abstract

At the time of writing, a sharp increase in military buildup can be observed. Traditionally, the military and arms expenditures are a policy field, which is characterized by secrecy and, not infrequently, by intransparency. The GMI tackles this problem as it presents the relative importance of the military apparatus of a state in relation to the overall society. It defines the degree of militarization by the behavior of a state in distributing its resources to the military sector in comparison to other sectors in society.

The debate on the connection between armament and development is characterized by two main arguments. On the one hand, it is argued that military expenditures stimulate economic growth. On the other, those who criticize spending on the military argue that resources are taken away from important development-relevant sectors. The problem of many developing countries is that the military has an above average need for funds. Studies have shown that particularly poor states prioritize military spending above health spending. In many countries, excessive militarization hinders the necessary structural change of the economic and social framework conditions and enforces development deficits in its industry and agriculture. On the other hand, a militarization which is too low can also be problematic and thus hinder development as a too low degree in militarization can point to fundamental deficits in the security sector. A weak or not functioning security sector cannot prevent violence and conflicts which negatively affect the population and its development. One result is often fragile and weak states in which economic growth and development cannot prosper.

If one looks at some countries as an example, Angola, Yemen, and Syria show that an above average amount of resources are spent on the military sector which prevents economic and societal development. Poor

countries with high militarization often tend to neglect the health system. The structural deficits in social sectors caused by this lack of funds thus hinder the economic and societal development.

The opposite can be observed for instance in Kenya, Mali, the Democratic Republic of the Congo (DRC) or Bangladesh. In all these countries, an insufficiently furnished security apparatus can often not guarantee security within and outside of the country. Conflicts between governments and rebel groups rage in these countries which in some cases lead to the total loss of rule of law in parts of the countries. Structural deficits in governance structures and framework conditions, which complicate economic development are the results of parallel state structures, such as in the DR Congo, or weak security apparatuses.

In individual regions, different developments in militarization can be observed: while in Europe, there is a visible divide between Western and Eastern Europe and the financial crisis forces many western European states and the United States to decrease their military expenditures, it has been established that many threshold countries have increased their military spending. Many developing countries, too, there is a differentiated picture: In Sub-Saharan Africa, many post-conflict countries show a slight decrease due to the influence of disarmament, demobilization and reintegration (DD&R) processes. At the same time, some countries, such as Angola and Mauritania show comparatively high degrees in militarization.

The fact that four countries of the Middle East are amongst the top 10 of 2009 shows that this region in which there are a lot of conflicts is highly militarized, which contributes to its instability. All in all, in 2009, nine of 15 countries of the region were amongst the 20 countries with the highest militarization. One can say that this constant high militarization of not only Israel but also other countries in the region is due to mutual threat perceptions.

In Latin America, a comparatively high militarization can be observed against the backdrop of a threatening arms race and many unsolved (border) conflicts that have been going on for years. In Asia, however, militarization is quite heterogeneous. On the one hand, the rivalry between China and India for regional influence has made militarization rise in both countries. On the other, in conflict countries, such as Sri Lanka, Thailand or Indonesia militarization is very different.

Introduction

At the time of writing, a sharp increase in armament can be observed. It is true that some European countries under the pressure of the economic crisis cut their military budgets and suspend many arms procurement projects whereas in emerging economies and numerous oil exporting countries, a reversed trend can be observed: sheer unrestricted conventional armament. Recently, Saudi Arabia has concluded its largest arms deal in its history with the United States, worth US \$60 billion. If the US congress approves of this deal, it contains, for instance the sale of 84 F-15 fighter planes, 190 helicopters and numerous bombs, rockets and other military equipment.¹ India is planning to buy between 250 and 300 fighter jets worth US \$30 billion from Russia in the next ten years.²

After the end of the Cold War 1990, there was justified hope of global trend towards disarmament which would free resources in many parts of the world which would stimulate economic and societal

development. In part, it has manifested itself.³ Between 1989 and 2000, global military expenditure has decreased by 43 percent. But if not earlier but since the 9/11 bombings at the latest, a new trend towards armament can be observed in many countries. Military expenditures worldwide have increased by 49 percent and reached a new high in 2009 with US \$1572 billion in constant prices. The United States had a significant share in global military expenditures and the overall increase. In 2009, its share in global expenditures amounted to US \$663 billion; 43 percent. In particular owing to the wars in Afghanistan and Iraq as well as the fight against terror, expenditures increased by 75 percent between 2000 and 2009.⁴

This is where the Global Militarization Index (GMI) of BICC (Bonn International Center for Conversion) comes into play. It presents the militarization of a country and thus shows developments and processes in resource allocation of a given country. It can be used as a tool for assessing the relationship between military to non-military resources and, additionally, can be used to evaluate the development orientation of countries as described in more detail in the following. Building on the new available data of the GMI, general as well as regional trends and developments can be analyzed. First, two basic problems of militarization will be explained in detail.

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- 3 Heinemann-Grüder, Andreas. 2009. „Neue Hochrüstung: Ursachen und Alternativen“ In Andreas Heinemann-Grüder et al. (Hrsg.). *Friedensgutachten 2008*. Münster: LIT Verlag, pp. 30-41.
 - 4 Perlo-Freeman, Sam et al. 2010. *SIPRI Yearbook 2010: Armaments, Disarmament and International Security*. Oxford: Oxford University Press, pp. 178-200.

1 UK Telegraph. "US to sell \$60 billion in advanced arms to Saudia Arabia", 20 October 2010.

2 DefenseNews. "India to Buy 250-300 Fighter Jets from Russia", 7 October 2010.

The GMI as a tool for evaluating the development orientation of states

Traditionally, the military and military expenditures are a policy field which is characterized by secrecy and, not infrequently, by intransparency. The GMI tackles this problem as it presents the relative importance of the military apparatus of a state in relation to the overall society. It defines the level of militarization by the behavior of a state in distributing its resources to the military sector in comparison to other sectors in society. It is true that when looking at high military expenditures and armament in general, one suspects that high military expenditures and armament are a great burden. But more differentiated observations are always necessary.

Problem definition

It is often argued that by using unused human resources and capital, public expenditure in the military sector could stimulate the economy. The military creates secure jobs and a secure income and offers further education and training opportunities. By investing in dual-use infrastructure the entire development is enhanced. On the other side of the coin, it is pointed out that by doing this, funds are taken away from important development-relevant sectors. A public budget deficit leads to an absence of investments which, in particular, are important for the economic development in developing countries. Additionally, public spending on the military could be invested in more productive areas. Yet another argument is that many skilled workers are taken away from the general job market.

Both opinions make clear that a differentiated observation is necessary to identify the direct effects of a high level of militarization on the economic development of a country.

With the help of the GMI, two different problems can be identified for developing countries:

High militarization: In many developing countries, the military has an above-average need for funds. This inevitably leads to conflict between the military and the social sector when the national budget is being decided. The disadvantages faced by the social compared to the military sector can indeed have grave effects on the economic and human development of a country. Studies have shown, for instance, that poor countries in particular prefer military expenditures over health spending.⁵ In many countries, a militarization which is too high impedes the necessary structural change of the economic and social framework conditions and intensifies the development deficits in the industrial sector and in agriculture. Additionally, the demand by the military for skilled workers drains the job market of important resources for economic growth.

On top of this, high militarization can hinder good governance and foster corruption in case the military plays a dominant role within a state and uses it to influence the political process according to its interests. Often, the military hinders the democratization of a state.⁶ Internationally, a higher level of militarization can fuel regional tensions (arms race and threat perceptions) and thus worsen the framework conditions for economic development.

Summing up, it can be said that the disproportionate allocation of public resources in favor of a high militarization is highly problematic for a sustainable economic development of poor countries.

5 Stalenheim, P., Perdomo, C. & Sköns, E. 2007. *SIPRI Yearbook 2007: Armaments, Disarmament and International Security*. Oxford University Press: Oxford, pp. 270ff.

6 Büttner, Veronika. 1995. "Hemmt Rüstung Entwicklung? Zum Zusammenhang von Sicherheitspolitik, Entwicklung und Rüstung in Entwicklungsländern" In Erich Reiter (Hrsg.): *Jahrbuch für internationale Sicherheitspolitik 2000*, Wien: Mittler.

Low militarization: Even if it appears to be a paradox—low militarization can also be problematic and thus a hindrance for development—low militarization can point to basic deficits in the security sector. A stable and secure environment, necessary for economic growth and development, can often not be guaranteed. Adequate militarization can have positive effects if it prevents dangers and preserves security interests—both internally and internationally—and creates a good investment climate. If military resources of a country are too low, however, a government will possibly not be able to sufficiently enforce its state monopoly on the use of force.

Lacking loyalty of insufficiently paid and badly equipped soldiers towards the government can be just as destabilizing as bad training of soldiers could possibly lead to human rights violations when deployed in the country. Insufficient equipment of the army can hamper the perception of the security tasks they have been allocated—as can presently be observed in Afghanistan.

In short, a weak or non-functioning security sector cannot prevent violent conflicts, which negatively affect the population and its development sustainably. The consequences often are fragile and weak states in which economic growth and development cannot develop. Amongst the 40 states with the lowest militarization, there are eleven states which, according to the Failed State Index can be found amongst the least stable states. If one also looks at the category where those states are listed in which stability is endangered, it becomes clear that 30 of the 40 countries with the lowest militarization show marked characteristics of weak and fragile statehood.

Results of the GMI

The GMI shows the militarization of individual countries and thus offers a foundation for identifying the underlying problems described above (high militarization/ low militarization) for individual states. In the following this will be shown with the help of the examples of specific countries.

High militarization

In 2009, **Angola** was on position 31 of the GMI and thus showed a relatively high level of militarization. At the same time, the country is on position 146 of the Human Development Index (HDI), which shows clearly that there are still marked development deficits in the country. It is true that Angola has rich oil reserves but more than 70 percent of the population still live below the poverty line. Despite high growth rates, which are down to oil production, jobs in the industrial sector are rare and unemployment high. Health spending (2008: 2.7 percent of Gross Domestic Product) is lower than military spending (2008: 3.0 percent of GDP). Income from oil production sponsors Angolan militarization to a substantial degree.

Disproportionate allocation of resources leads to the fact that still a great amount of the population finds their jobs in the primary sector; the fight against poverty can hardly show any successes and the societal development stagnates because funds from the main source of income for the state are invested in the military sector.

Djibouti, situated in the Horn of Africa, was on position 40 of the GMI in 2009 which shows that it uses many of its limited resources for the military apparatus, despite a slight decrease in the last few years. This small country also has to deal with substantial development deficits and can only be found on position 147 of the HDI. It is true that the country lies at an important strategic geographic position and profits from the free trade zone at the Horn of Africa in terms of its

economy but unemployment is still high, with 60 percent in the cities. Despite large investments from abroad, the government does not seem to be able to make sufficient resources available for the country's economic development. There are also great deficiencies in the health sector. This becomes clear when looking at the low life expectancy, which lies at 55 years and which positions Dschibouti on one of the lower ranks of the HDI. In addition to this, 74 percent of the population are considered to be poor of which 42 percent must be regarded as very poor. This situation also makes clear that the disproportional allocation of funds to the military sector not only takes away important resources from the fight against poverty and unemployment but also for the stimulation of the economy.

Yemen also shows a high level of militarization; in 2009 it was on position 35 of the GMI. Although its level of militarization has decreased in the past few years, the country is still highly militarized and uses a great amount of the available resources for its military. The fact that it is on position 133 of the HDI shows that at the same time its development is low. An estimated 35 percent of the population live below the poverty line. The dependence of oil exports leads to a little diversified economy and a dominance of oil revenues in government income of up to 70 percent. And still the government is not able to finance a sufficiently functioning health system. This is also shown by the low life expectancy of 63 years. The illiteracy rate of the country of approx. 50 percent points to an inadequate education system.

Yemen is one of the most corrupt countries in the entire region of the Middle East. Expenditures on the military and the social sector are grossly disproportionate: whereas government expenditures for the military amounted to 5.6 percent of GDP in 2009, spending on social services (health, education, etc.) was only at 8.4 percent of GDP.

Syria has been amongst the most highly militarized states of the world for years. In

2009, it was on third position of the GMI—with no change compared to the previous years. Its recent position 111 of the HDI characterizes Syria as a country with medium human development. Two of the main hurdles to development in Syria are the state controlled economy and decreasing income from oil exports. Increasing budget deficits which bind resources and hardly permit additional investments in non-military areas also play a role. For instance, in the past few years, merely between 3.5 and 4 percent of GDP were available for the health system. Contrary to this, the government in Damaskus made between 3.5 and 5 percent of GDP available to the military. The education system is lacking financial resources, which leads to desolate conditions in overburdened educational institutions which have a remarkably high attendance rate of nearly 100 percent.

The Syrian government does not seem to make sufficient funds available to guarantee a secure supply of water, energy and food to the population. This situation becomes even more problematic through internally displaced refugees and refugees from neighboring countries.

Even though all in all, Syria is on a good path of economic and societal development, the lack of resources hinders an improvement of the situation for many parts of the population while high military expenditures bind important resources for a renewal of the economy.

Low militarization

In 2009, **Kenya's** level of militarization was very low and ranked on position 125 of the GMI. In 2008, the country was shaken by great upheavals, which cost up to 1.000 peoples' lives and forced 300,000 people to flee the country. This unrest was the effect of a controversial presidential election won by the then incumbent Mwai Kibaki who emerged victorious. Against the backdrop of a major political crisis, accompanied by

ethnic conflicts, the government could only guarantee a limited amount of internal order and security. Especially in areas of the opposition group Orange Democratic Movement (ODM) led by Raila Odinga, state authority totally collapsed. The brutal reaction of security forces led to the fact that until today there are armed groups and no political will of resolving them is to be seen.

Ethnic conflicts and unsolved land disputes are the main reasons why these nationally widely spread militia groups fight each other. State military and security forces do not seem to be able to disarm the militias as proved by a failed attempt in 2007. The political crisis as well as weakness of the state organs to uphold internal security have led to the fact that Kenya is on position 13 of the recent 2010 Failed States Index; there is the danger of an increase in instability.

In **Mali**, the state military apparatus is also furnished with little resources. On position 110 of the GMI 2009, its level of militarization is one of the lowest in the world. Although the general situation in Mali has improved in the past few years, the state security apparatus is unable to reign in the activities of the rebel group of the Tuareg and to restore public order and internal security in those areas where the rebel group operates. The hard-won degree of stability is threatened by militia in the north of the country who abduct innocent people and attack government institutions and forces. At the same time there is the danger of the violence which has erupted in Niger reaching Mali, as the Malian security forces cannot sufficiently protect the common border.

To create good economic framework conditions which are not an overall feature in Mali, first internal and external security has to be established. As economic causes are part of the underlying reasons for conflict between the government and the Tuareg rebels, the fragile overall situation has to be addressed by an extensive reduction of poverty and economic growth.

In 2009, the **Democratic Republic of the Congo** (DRC) was on position 112 of the GMI. In numerous parts of the country, armed conflicts rage, which are totally beyond the control of the government armed forces. Insufficient resources for the state military apparatus, desolate military structures and bad governance contribute to the collapse of the state. The country is on fifth position of the Failed States Index and is one of the most fragile and weakest states in the world. Besides corruption, the existence of numerous rebel groups weakens the state and undermines the state monopoly of violence. In view of continuing conflicts in particular in the east and southeast of the country and the activities of the established rebel groups and external actors, the state military is unable to enforce governmental power in those regions far away from the capital of Kinshasa. Many rebel groups and militias are completely beyond state control and act *quasi* as state in a state. The bad equipment—in all aspects—of the military is also due to the fact that president Kabila purposely keeps the influence and muscle of the military small so that his private activities are not hampered by them. Even if the many conflicts in the DRC cannot be solved by a functioning and well equipped military alone—a functioning, loyal military apparatus which is also respected by the government would be a basic precondition for establishing long-term stability and to reestablish internal and external security.

In **Bangladesh**, a low level of militarization can also be observed: position 128 of the GMI. The country is only ranked on position 129 of the HDI. It can be found on position 24 of the Failed States Index, which signals a critical state of stability in the country. Indeed, it is involved in numerous conflicts with neighboring countries, such as Burma and India and suffers from internal conflicts. The military, however, is hardly used to create internal and external security but is regularly used in United Nations missions, which generates income for Bangladesh.

Even though there were massive eruptions of violence before the elections of 2008 caused by highly armed politically motivated groups, the country was able to return to democracy. But at the time of writing there is no sign which could let us assume that the military acts as a stabilizing factor.

Militarization between 1990 and 2009: Regional developments in focus

The Global Militarization Index (GMI) defines militarization in the quantitative sense as the means and capacities available to the state armed forces. It shows the relative weight and meaning of the military apparatus of a state in relation to the society as a whole. For this, data, such as 'military expenditures as share of the Gross Domestic Income (GDI)' or 'military expenditures in relation to spending in medical care' are taken into consideration. The level of militarization is then determined with a number of points between 0 and 1,000. Like this, countries are ranked (for instance Top 10 Index or Bottom 10 Index) which in turn gives information on the level of militarization in comparison to other countries. An analysis of

levels of militarization permits to observe tendencies of disarmament or armament and can serve to ask certain development- or social-policy questions.

In 2009, **Israel** (865 points), **Singapore** (843 points), **Syria** (796 points), **Jordan** (779 points), **Russia** (777 points), **South Korea** (748 points), **Cyprus** (738 points), **Greece** (736 points), **Kuwait** (736 points) and **Belarus** (731 points) constituted the top 10 of the GMI.

Middle East

The fact that four countries of the Middle East are amongst the top 10 shows that the high militarization of this conflict-riddled region contributes to further exacerbate instability. All in all, nine of the 15 countries in that region were amongst the 20 countries with the highest levels of militarization in 2009.

This tendency towards militarization in the Middle East has already been observed since 1990. While then three countries, **Israel**, **Kuwait** and **Syria**, were amongst the top 10 most militarized countries worldwide, their number rose until 2009 to four (inclusive Jordan on fourth position of the GMI). Not least because of the high oil revenues of the past years, was an increase in military expenditures between 2000 and 2009 of 83

Table 1: TOP 10—Overview 1990 to 2009

	Country	Value 1990	Country	Value 2000	Country	Value 2009
1.	Israel	929	Eritrea	1000	Israel	865
2.	Singapore	880	Israel	886	Singapore	843
3.	Cyprus	858	Singapore	856	Syrian Arab Republic	796
4.	Kuwait	850	Syrian Arab Republic	836	Jordan	779
5.	Syrian Arab Republic	844	Cyprus	803	Russian Federation	777
6.	Bulgaria	841	Jordan	801	Korea, Republic of	748
7.	Albania	838	Russian Federation	795	Cyprus	738
8.	Vietnam	829	Bulgarien	786	Greece	736
9.	Nicaragua	816	Croatia	783	Kuwait	736
10.	Greece	794	Greece	781	Belarus	731

percent from US \$51.4 billion to US \$91.4 billion possible.

The constantly high militarization of not only Israel but also other countries in the region can be attributed to mutual threat perceptions. Israel's threat perceptions are fueled in particular by the constant conflict in the Palestinian Territories, terrorist attacks, the threatening conflict in Lebanon and the Iranian regional and nuclear policy.

For **Saudi Arabia**, an increase in militarization can also be observed: whereas in 1990, it was on position 21, it temporarily fell to position 34 in 1996 to then continuously rise to position 15 (2009). Extensive arms deals with the United States in the next ten years, amounting to US \$60 billion, could increase the level of militarization further.

Russia, the United States and NATO

Shortly after the end of the Cold War, **Russia** became successor of the former Soviet Union in 1992 and became the most militarized country in the world. Compared to this, the **United States** showed a far lower level of militarization (position 30). In 2000, the Russian Federation then was in position 7. Even twenty years after the end of the confrontation between the Eastern and the Western blocs in Europe it becomes clear that Russia (2009: position 5) uses more resources for the military sector—compared to society as a whole—than the United States whose absolute defense budget is markedly higher than that of Russia. With US \$663 billion and a share of 43 percent of global military expenditures, the United States are positioned at the very top of global military expenditures.

Russia has a great number of conventional weapons systems. Despite the reduction in military personnel, foreseen in its military strategy of 2008, its army is still relatively large. Compared to this, the United States have visibly reduced their army in the course

of its modernization and reshaping in the past decades. But the wars in Afghanistan and Iraq as well as the fight against terror have required great financial commitment. While the level of militarization in the United States between 1992 and 2000 had decreased constantly from position 30 to position 57, in 2001 and later, this trend changed and continued with the United States arriving at position 35 in 2009.

A comparison of the former blocs shows: while most NATO member countries showed medium to little militarization in the early 1990s, the former member states of the Warsaw Pact found themselves at very high positions. The GMI seems to support the thesis that NATO has out-armed the Warsaw Pact. Its high military expenditures in particular on conventional weapons were in stark contrast to the development of societies as a whole and the economy in Eastern bloc states, which additionally could not keep up with the technological progress of the NATO countries.

Since the mid-1990s, one can observe that some former members of the Warsaw Pact, namely **Poland** (2000, position 41; 2009: position 84), **Rumania** (2000: position 18; 2009: position 48), and **Hungary** (2000: position 37; 2009: position 68) show markedly lower levels of militarization.

Exceptions are **Bulgaria** and **Belarus**. In 2000, Bulgaria could be found in position 8 and in 2009 still position 19. Possible causes for this are its extensive participation in international military operations, such as in Iraq, and its strategically important position bordering the Black Sea. Belarus reached a position among the top 10 in 2009 whereas in 1992, it was on position 15. After a short phase of less militarization between 1996 and 1998, it reached position 19 in 2000. The lasting relatively high militarization in this former Soviet republic can be traced back to the stabilizing function of the military for the authoritarian regime of President Alexander Lukashenko who has been in office since 1994.

In most new NATO member states in Eastern Europe, there is a tendency towards disarmament. Exceptions are **Estonia** (2000: position 65; 2009: position 37), **Latvia** (2000: position 90; 2009: position 78) and **Lithuania** (2000: position 78; 2009: position 52). Possible causes for this are the still perceived threat by Russia and the necessary modernization of its army in the framework of its accession to NATO. NATO, for instance demands a military budget of at least two percent of GDP, which it has declared to be the critical mark for maintaining the defense duties in the alliance.

Amongst the Western European NATO partners, **Greece** has a particularly high militarization level. It remains constantly amongst the top 10 (1990: position 10; 2000: position 10; 2009: position 8). For years, the country has spent the most resources (in relation to the GDP) on its military in Europe and the European Union. Driving factors could be the Cyprus issue and generally the continuing conflict with its neighbor and NATO partner Turkey, which triggers off certain threat perceptions in Greece.⁷ These high military expenditures, which were used for extensive arms deals in the past, could be one of the causes of the economic and financial crisis. It remains to be seen whether the tough austerity measures of the Greek government which have been laid down by the European Union and the International Monetary Funds will have an effect on the level of militarization in the coming years.

The unresolved conflict in **Cyprus** is reflected in its constantly high level of militarization (1990: position 3; 2000: position 5; 2009: position 7).

Since reunification in 1991, Germany's level of militarization has decreased more or less constantly from position 36 to position 86 in 2007. In 2009, with position 81 in the GMI, its militarization remained on an average level.

BRIC states

Marked increases in military expenditure can be observed in emerging economies and countries with particularly high economic growth. This is why the so-called BRIC states—**Brazil, Russia, India** and **China**—are being observed in more detail. High growth rates have created extensive financial resources, which were also invested in the military sector. Military expenditures in Brazil between 2000 and 2009 rose by 38 percent; those of Russia by 105, of India by 67, and China by 216 percent. Part of these expenditures was channeled into comprehensive modernization programs of the respective armed forces.

While Russia tried to support its world political position by modernizing its army, Brazil continues to aim for a position of regional leadership, which also counts on military strength. India sees itself confronted with threats on various fronts: in its Kashmir conflict with Pakistan, the country keeps experiencing more intensive phases which also include armed violence. China, too, puts great political and military pressure on India with its competition for regional dominance. In addition to this, by massively expanding its military, the People's Republic intends to consolidate and expand its rising role in world politics. At the same time, Peking increases its number of arms to respond to threats from within, such as uprisings, to be capable of responding to the Tibet question and foreign policy challenges, such as the conflict about the status of Taiwan and the dominance of the United States in the region; if necessary by military means.

Both the share of military expenditures in GDP and health expenditure have only changed marginally in the BRIC states. Brazil's militarization (1990: position 66; 2000: position 79; 2009: position 76) has constantly been average—with a light tendency towards a slight decrease. The same holds true for India's militarization (1990: position 79; 2000: position 87; 2009: position 79) despite a light tendency towards an increase. China's

⁷ Cf.: Grebe, Jan and Jerry Sommer. 2010. „Griechenland: Hohe Militärausgaben trotz Finanzkrise“. BICC-Focus 9, BICC:Bonn, June.

picture (1990: position 67; 2000: position 94; 2009: position 88) is similar to the one of Brazil. Russia, due to its special position in world politics, is the only BRIC state which has a constantly high level of militarization (1992: position 1; 2000: position 7; 2009: position 5). Still, even in Russia, a direct discrimination of other sectors cannot be observed at the time of writing. Thus all countries are able to enforce markedly the development of their society.

Sub-Saharan Africa

In Sub-Saharan Africa, one has been able to observe a low level of militarization for years. Exceptions are **Angola** (2009: position 31), **Mauretania** (2009: position 36), **Djibouti** (2009: position 40), **Chad** (2009: position 57), and **Namibia** (2009: position 59).

For a longer period of time, **Eritrea** took a top position. Since 1997 prior to the war with Ethiopia, one was able to observe a sharp increase in militarization. After the war years 2000 to 2002 in particular, it became clear that the military was allocated a disproportionate amount of resources. Such

an allocation until today has been lacking in other sectors and has, thus, negatively affected development. In the years for which reliable data have been available (1998 to 2006), Eritrea has shown the respectively highest level of militarization in the world. No other country in Africa has spent that much for its military in relation to its GDP. A successful demobilization and demilitarization process has not taken place. Long after the war, the military has a lot of influence with regard to the population, for instance through special recruitment rights and the control of government resources.

On first sight, it seems to be paradox that many African countries, such as Madagascar (beginning of armed conflict 2002, position 126), the Democratic Republic of the Congo (beginning of war in eastern Congo 2006, position 133), the Central African Republic (beginning of war 2006, position 126), Nigeria (beginning of armed conflict 2004, position 133), and Mali (end of war 1996, position 111) were or are affected by armed conflict but still show low levels of militarization. In other words, the state security apparatus in these countries is too weak to create the necessary

Table 2: Overview of DD&R processes in Sub-Saharan Afrika

Country	Period	GMI value start	GMI value end
Angola	2003–2009	715	634
Burundi	2004–2008	643	554
Central African Republic	2004–2008	390	406
Chad	2005–2010	471	571 (2009)
Congo, Democratic Republic	2004–2007	379	419
Congo, Republic	2005–2008	565	525
Côte d'Ivoire	2007–	418	404 (2009)
Eritrea	2002–	965	928 (2006)
Ethiopia	2000–2003		
Guinea-Bissau	2000–2002	603	578
Liberia	2003–2008 (1996–1997)	345 (2004)	236
Niger	2006–2007	347	335
Rwanda	2001–2008	596	474
Sierra Leone	2000–2004 (1998–2002)	383 (283)	410 (426)
South Africa	1995–2001	576	499
Sudan	2006–	557	538 (2009)
Uganda	2000–2008	492	465

public security in the country and outside of the country. In such cases, the funds the government makes available to the military indeed seem to be not sufficient.

The influence of disarmament, demobilization and reintegration (DD&R) processes on militarization does not show a clear picture. In the past decades, only a limited amount of resources seems to have been freed through DD&R for other sectors. This correlates with the observation that in 16 countries in which DD&R processes have taken place no significant decrease in the level of militarization has taken place. There are individual countries, such as **Sierra Leone** and the **Central African Republic**, for which even an increase in militarization is recorded. In **Angola** and **Burundi**, on the contrary, levels of militarization have decreased in the past few years.

Asia

In 2009, two of the most highly militarized countries in the world, **Singapore** and **South Korea**, were situated in East Asia. Certainly, the continuing tensions with North Korea, which repeatedly manifest themselves in military incidents, are one cause for the high level of militarization.

There are no obvious explanations for the high level of militarization of Singapore. The country has modern weapons systems and a well trained army. Measured against the small size of the city state and the relatively small population and the overall peaceful development, one could consider the military to be oversized. A similar pattern can be observed for **Brunei** (2009: position 11), which for years has shown a high level of militarization (although in the past few years, this level has decreased). Owing to its rich oil and gas reserves, Brunei has one of the highest GDPs of developing countries. Even though at the time of writing there are no direct threats for the country, government spending for the military is very high considering the small size of the kingdom.

In both cases, the general political situation might be the underlying factor. A number of countries in this region fight internal, partly bloody conflicts, such as Burma, Indonesia and the Philippines. Since 9/11 and the Bali bombings on 12 October 2002, the Islamist terrorism poses a great threat to many—particularly western-oriented—states.

Central and South America

Most countries in Central America show relatively low levels of militarization. A marked decrease in militarization could, for instance, be observed in **Nicaragua** between 1990 (position 9) and 2009 (position 115), where at the end of the armed conflict, which was actively supported by the United States resource allocation to the military was reduced considerably. Similar developments were observed in the same time period for Guatemala and El Salvador as a number of conflicts had come to an end. The reason why the drug wars in Guatemala, El Salvador and Mexico are not reflected in a high level of militarization and extensive state expenditures may be that it is not the military which finds itself in the front lines in these countries but the police and security forces.

In South America, all countries' levels of militarization are consistently quite high. The cause for this lies surely in long-lasting threat perceptions, often connected with conflicts over borders, such as between Chile and Argentine and Peru, or Peru and Ecuador.

One exception in this region is **Argentine**, where between 1990 and 2009 a slight but steady decrease in the level of militarization could be observed (1990: position 69; 2000: position 125; 2009: position 120).

Against the background of the war and the fight against rebel groups and drug cartels, militarization in **Columbia**, supported by financial support by the United States since the beginning of the 21st century, has risen again (1990: position 49; 2000: position 72; 2009: position 43).

Annex

BICC's Global Militarization Index (GMI)

The Global Militarization Index (GMI) represents the relative weight and importance of the military apparatus of a state in relation to society as a whole. For this, the GMI investigates a number of indicators to represent the level of militarization of a country:

- Military spending in relation to Gross Domestic Product (GDP) and health services;
- The ratio of (para)military personnel, reserve forces and physicians;
- Heavy weapons in relation to the population.⁸

Table 3: GMI indicators and weighing factors

Category	Indicator	GMI weighing factor
Expenditures	Military expenditures as percentage of GDP	5
	Military expenditures in relation to health spending	3
Personnel	Military and paramilitary personnel in relation to population	4
	Military reserves in relation to population	2
	Military and paramilitary personnel in relation to physicians	2
Weapons	Heavy weapons in relation to population	4

Method

The GMI is divided into three overarching categories: expenditure, personnel and heavy weapons.

⁸ Boemcken, Marc von. 2009. "The Global Militarization Index (GMI)." In BICC. *Annual Report 2008/2009*. Bonn: BICC, pp. 18–23.

Military spending

Military spending in relation to GDP and health spending are the most important indicators for determining the level of militarization. Financial resources which are made available via the military budget by a government are an important factor which affects capacities and size of a state's armed forces. The other indicator the GMI uses is the comparison between the total military budget and government spending on health services.

Figures for military expenditure are compiled from the data base of the Stockholm Peace Research Institute SIPRI.⁹ Even though SIPRI may currently be regarded as the most reliable source, data on military expenditure has to be treated with extreme caution. For many countries, especially in the developing world and autocratic states, the figures are but rough estimates. Most figures refer to the year 2009, the currently available. In cases where SIPRI does not provide any up-to-date information, we adopted the latest available figures provided they were no older than 2006.

Data on gross domestic product was taken from the International Monetary Fund. Data on health expenditure used have been extracted from the data base of the World Health Organization.

Personnel

Besides military expenditure, the level of militarization is also represented by the relation of military personnel to the total population and physicians. The first and most important indicator in this category is the active (para)military personnel to the total population. Paramilitary personnel were included here, since in many countries the regular military alone does not adequately

⁹ <http://www.sipri.org/research/armaments/milex/research/armaments/milex/milex_database>.

reflect the total size of the armed forces. The main criterion for coding an organizational entity as either military or paramilitary is that the forces in question are under the direct control of the government in addition to being armed, uniformed and garrisoned.

For a comprehensive presentation of the available personnel and an adequate representation of the relative level of militarization, a second indicator in this category takes into account the percentage of reserve forces in the total population. This factor is relevant for some countries, such as Switzerland that have a comparably small standing army but a more substantial amount of available reserves within society.

The third indicator compares the total amount of military and paramilitary forces with the number of physicians in a country in order to express the relation between military and non-military expertise in a society.

All data on military personnel was compiled from the *Military Balance*, the yearbook published by the Institute for Strategic and International Studies (IISS). Population size figures were taken from the Vital Statistics Report of the United Nations; data on the number of physicians from the World Health Organization.

The Method of the GMI

In order to increase the compatibility between different indicators and preventing extreme values from crating distortions when normalizing data, in a first step every indicator was represented in a logarithm with the factor 10. Second, all data was normalized using the formula $x=(y-\min)/(\max-\min)$, with min and max representing , respectively, the lowest and the highest value of the logarithm. In a third step, every indicator was weighted in accordance to a subjective factor, reflecting the relative importance attributed to it by BICC researchers (see Table 3). In order to calculate the final score, the weighted indicators were added together and then normalized one last time on a scale ranging from 0 to 1,000. For better comparison of individual years, all years were finally normalized.

Heavy weapons

Finally, to determine the level of militarization of a country, which does not only consist of resources and personnel, specific types of heavy weapons have to be taken into account. This is why the GMI, as its third category takes into consideration the number of an armed forces' heavy weapons in relation to the total population. Heavy weapons are defined here as any piece of military equipment which fits into either one of four categories: armored vehicles (armored personnel carriers, light tanks, main battle tanks), artillery (multiple rocket launchers, self-propelled artillery, towed artillery) above 100mm caliber, combat aircraft (attack helicopters, fixed-wing fighter aircraft), and major fighting ships (submarines, major surface combatants above corvette size).

Data on weapons holdings was collected by BICC from different sources, mainly the Military Balance from ISS. Data on small arms and light weapons (SALW) is not only extremely difficult to obtain but also unreliable and was thus not included in the GMI.

Facilitating Peace and Development through Research, Advisory services, Training

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