# The Commitment to Development Index: 2018 Edition

## Methodological Overview Paper

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# Introduction

This document describes the methodology used to calculate the [Commitment to Development Index](). The Index comprises seven components - on aid, finance, technology, environment, trade security and migration. Each component is underpinned by a series of indicators of policy effectiveness in these areas which are standardised and weighted according to their importance in development.

This methodology of the CDI should enable users to understand how the Index is calculated, and can be used alongside the [spreadsheets]() which make the calculations publicly available.

After a fuller description of the index, including an explanation of some of the overarching principles it uses, this document describes why each component is important to development, then sets out how that component is calculated.

**The Commitment to Development Index**

The [Center for Global Development]() (CGD) launched the 16th edition of the [Commitment to Development Index]() (CDI) in September 2018. Published annually since 2003, the CDI reminds the world that reducing poverty in developing countries is about far more than giving aid money. The CDI assesses seven policy areas: aid (both quantity, as a share of gross national income, and quality), trade, finance, migration, environment, security, and technology. Within each component, a country receives points for policies and actions that support poor nations in their efforts to build prosperity, good government, and security. The scores across these seven components are averaged for a final score.

Where appropriate, the scores are adjusted by different measures, such as population size or GDP/GNI in order to discern how policy effort given each country's capabilities. In other words, the CDI rates countries in ways that allow normative comparisons, which usually means adjusting for size. Denmark cannot be expected to give as much foreign aid as Japan, whose economy is 25 times larger, but Japan could be asked to give as much as Denmark as a share of its gross national income, and that is how the index gauges aid quantity. Similarly, Switzerland cannot be expected to import as much from developing countries as the United States, but it could have trade barriers as low, which is one of the things the trade component measures.

The CDI not only measures policy *outcomes* such as the amount of greenhouse gases emitted, but also policy *effort*, such as how fast greenhouse gas emission have been reduced over the last years. Moreover, the CDI looks at trends over time, but the priority is to have the best measure in the latest year.

The CDI aims to assess the most current policies but in practice, because of lags in official data, most information used is lagged by one or two years. While we do only collect publicly available data and are unable to provide data ourselves, we are committed to collect the most recent data.

This paper describes the latest CDI methodology. It builds on background research done originally for each of the seven policy areas:

**Trade:** Roodman 2007[1]; Cline 2004[2]; Moran 2007[3];

**Migration:** Grieco and Hamilton 2004[4]; Lowell 2006[5];

**Security:** O'Hanlon and de Albuquerque 2003[6];

**Technology:** Maskus 2005 [7];

**Environment:** Cassara and Prager 2005[8];

**Finance:** Janský 2013[9]

This methodology has been refined over the years. The more substantial updates to the methodology happened in 2013 and are described in the following series of "Europe Beyond Aid" papers:

- **Aid** - [Assessing Europe's Commitment to Development Assistance](#)
- **Finance** —
    o [The Role of European Countries in Fostering Development through International Investment](#)
    o [Illicit Financial Flows: Policy Responses in Europe and Implications for Developing Countries](#)
- **Technology** – [Evaluating Europe's Contribution to the Transfer of Technology and Knowledge to Developing Nations](#)
- **Environment** – [Assessing European Commitment to Global Environment](#)
- **Trade** – [Assessing Europe's Commitment to International Trade](#)
- **Security** – [Europe's Commitment to International Security](#)
- **Migration** – [Assessing European Commitment to Migration](#)

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[1] "Production-weighted Estimates of Aggregate Protection in Rich ...." 1 Jun. 2007, https://econpapers.repec.org/paper/cgdwpaper/66.htm. Accessed 4 Sep. 2017
[2] "Trade Policy and Global Poverty | Center for Global Development." 1 Jun. 2004, https://www.cgdev.org/publication/9780881323573-trade-policy-and-global-poverty. Accessed 4 Sep. 2017.
[3] "Rationale for Components of a Scoring System of Developed ...." https://www.researchgate.net/publication/267717528_Rationale_for_Components_of_a_Scoring_System_of_Developed_Country_Support_for_International_Investment_Flows_to_Developing_Countries_Summary_of_Changes_in_the_Index_of_Developed_Country_Support_for_In. Accessed 4 Sep. 2017.
[4] "Migration component - Center for Global Development." 20 Feb. 2004, https://www.cgdev.org/doc/CDI/Migration_2004.pdf.Accessed 4 Sep. 2017.
[5] "an evaluation of an extended index on pro-development migration ...." https://www.cgdev.org/doc/cdi/2006/lowellMigration.pdf. Accessed 4 Sep. 2017.
[6] "Note on the security component of the 2004 CDI Michael O'Hanlon ...." 20 Apr. 2016, https://www.cgdev.org/doc/CDI/security_2004.pdf. Accessed 4 Sep. 2017.
[7] "Components of a Proposed Technology Transfer Index: Background ...." https://www.cgdev.org/doc/CDI/technology2005.pdf. Accessed 4 Sep. 2017.
[8] "An Index of Rich Country Environmental Performance." https://www.cgdev.org/doc/CDI/Environment%202005.pdf. Accessed 4 Sep. 2017.
[9] "Illicit Financial Flows and the 2013 Commitment to Development Index ...." 16 Dec. 2013, https://www.cgdev.org/publication/illicit-financial-flows-and-2013-commitment-development-index. Accessed 4 Sep. 2017.

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This methodology draws heavily from the detailed and technical accounts first fully articulated in the [methodology paper of 2013](#), Though it must be noted that many of these methodologies and data sources have changed since then.

## Which countries were included for which edition?

Table 1 shows the 27 countries that are ranked in the CDI. The countries chosen above are all members of the [OECD-Development Assistance Committee (DAC)](#). Iceland and Slovenia are part of the DAC but are not currently part of the Commitment to Development Index (CDI). Also, while the European Union is a member of the DAC it we do not assess it as a single entity in the CDI.

**Table 1: Countries and inclusion in the Commitment to Development Index (CDI)**

| Year | 2003 | | 2008 | 2012 |
|---|---|---|---|---|
| **Countries included in CDI** | Australia<br>Austria<br>Belgium<br>Canada<br>Denmark<br>Finland<br>France<br>Germany<br>Greece<br>Ireland<br>Italy | Japan<br>Netherlands<br>New Zealand<br>Norway<br>Portugal<br>Spain<br>Sweden<br>Switzerland<br>UK<br>US | 2003 countries<br>+<br><br>South Korea | Countries included in CDI |
| **Total** | 21 | | 22 | 27 |

## Updates and changes in the 2018 Edition

CGD continually seeks to improve and refine the CDI in order to keep it relevant and useful. In making changes, we consult other experts and academics, policymakers, and representatives from countries who are [members of the CDI Consortium](#). The Consortium's input and advice very helpful but decisions on the approach are taken independently by the CDI's authors.

The CDI draws on a significant range of academic and policy expertise to develop into its current form. Several components still reflect the methods developed by past Directors of the CDI - David Roodman and Owen Barder. Of course, wherever possible we update the components with more recent data. The 2018 CDI uses the most recent data (though this often relates to 2017 or 2016). Some data and measures move slowly (for example trade

tariffs) so older estimates can still provide a reliable guide. Sometimes we smooth over years where year on year data is volatile or missing.

This year, within the aid component[10], we have made some changes to the way we calculate the quality of aid subcomponent. We continue to use the Quality of Official Development Assistance (QuODA) to measure CDI countries' bilateral and multilateral aid quality. The 2018 edition of QuODA uses a modified selection of 24 aid quality indicators and has switched data sources for some indicators from the monitoring survey of the Paris Declaration (no longer collected) to monitoring data from the Global Partnership for Effective Development Cooperation (GPEDC). A full account of the updates to QuODA can be found in the QuODA methodology document.

We have made a number of changes to the trade component to improve its method on assessing tariffs, and to succeed data sources which are no longer available. Tariffs are now weighted by the GDP per head of the trade partner, rather than being production weighted. Tariffs against low income partners are given a higher weight. A tariff against a rich country is thought to be less of an impediment to developing countries prospects through trade than is a tariff against a poor country. The new method also enables us to use relatively up-to-date tariff data from Market Access Map (MacMap), an online database from the International Trade Centre. Within the trade component, the measure we use to assess the border and logistic costs has moved from the World Bank's doing business indicator on costs, time and documents to import which is no longer collected, and has been replaced by elements of its Logistics Performance Index (LPI). Specifically, we use those measuring the ease of customs procedures and trade infrastructure.

Within the environment component, we have updated how we measure consumption of ozone depleting substances. Some country values for ozone depleting substances consumption are negative, for example because some countries now destroy stocks of such substances in recent years. The United Nations Environment Programme (UNEP) also measures whether substances have been exported to other countries who have ratified the Montreal protocol. This year we have decided to not reward countries for such negative values, so that countries with zero value - which neither emit or destroy/export are not scored worse than those that have already destroyed their stock in previous years or have already exported their technology.

We have slightly changed the way we weight the inflow of migrants in the migration component. Previously, the weighting was calculated on the GDP per capita of a migrant's origin country in 2001. But this rewarded countries for accepting more migrants from countries that were poorer in that base year than those that are poorer in the current year. In this edition, therefore, we use 2018 GDP per capita.

Finally, we have tried to take a more consistent approach to non-reporting of data. The vast majority of data we draw on is from official sources - like the UN, or OECD. Where data is missing, this is almost always as a result of countries failing to provide that data. Where older data is available (i.e. within the past few years), we will use those estimates but if this is not supplied, we will penalise the country by either giving a zero score, their own worst historical score minus one standard deviation, or the worst score in their cohort plus one standard

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[10] The terminologies of 'component', 'subcomponent', and indicator are discussed on page 46

deviation. This year has seen an increase in the such incidences, particularly in the arms exports subcomponent, where several countries have been penalised.

We have also simplified and or made some minor changes to some indicators or taken more data into account. The other more minor methodological changes are described in the respective component sections below.

**Summary of Main Changes**

| Component | Notable Changes |
|---|---|
| **Aid** | • In the aid quality subcomponent, updated QuODA indicator selection and data sources. |
| **Finance** | • In financial secrecy subcomponent, reduced the number of FSI indicators from sixteen to six.<br>• In financial secrecy subcomponent, added beneficial ownership and extractive country reporting scores. |
| **Trade** | • In the tariffs subcomponent, income weighted tariffs are used rather than production weighted tariffs.<br>• In the logistics performance subcomponent, replaced doing business indicators with Trade Logistics (customs and infrastructure) indicators. |
| **Environment** | • In the climate sub-component, removed credit for 'negative consumption' of ozone depleting substances |
| **Migration** | • In the migrant inflow subcomponent, weighted income of origin country to 2018 rather than 2001. |

## Looking beyond CDI 2018: The CDI Review

The 2018 CDI is the 16th edition. This seems an appropriate time to take a more fundamental look at the CDI's role, focus and coverage.

Since 2003, when the CDI was first published, the methodology has been continuously evolved. But the tension between historical consistency and accommodating new research findings on crucial questions in global development are ever present. While this tension generates creativity and healthy exploration of these issues, it also compels us to ensure we are ever vigilant in keeping it up to date and relevant.

We anticipate that the CDI will continue to be a quantitative and evidence-based in its approach, with a focus on policy effort and how this affects global development. However, we are interested in whether there are new issues we should be incorporating (such as tax, macro stability, and global public goods, for example), whether we should remove or place less emphasis on existing components, and on whether we should continue to focus solely on rich countries, where data availability is good, or broaden our focus to include new

development actors. As such, CGD is undertaking a comprehensive review of the CDI to account for these issues with the goal of strengthening this index further and keeping it useful and relevant to the development dialogue.

If you have any suggestions or feedback, please do get in touch - we would love to hear from you.

## The CDI's commitment to transparency, open data, and open science

Pursuing CGD's goal of providing independent research and practical ideas for global prosperity often involves making recommendations based on original statistical analysis. We believe that research that takes on a public role, such as becoming the basis for public policy decisions, should be transparent about its data and methods. Our policy is that the full details of these analyses should be publicly shared. Setting a high standard for data disclosure helps us meet the gold standard of scientific research: replicability. It also makes our research more credible and subject to fine-tuning through public examination.

This year's CDI analyses can be replicated by directly looking at the public data sheets here. Google sheets here. The interested reader can not only replicate the analysis based on these sheets but can also easily make their own copy (click on File > Make a copy) and plug in their own weightings to see how this would change the ranking. More details of CGD's policy of transparency can be found here (PDF). Within the spreadsheets we often include the original data source, usually with a hyperlink to facilitate easy data acquisition. For more involved analyses in some components we link to technical notes within this documents that will allow others to replicate the analysis.

The following sections provide a general overview of the CDI methodology. A more technical discussion can be found in the component background papers, to which links can be found in the 'Further reading' sections below, and which are hosted at cgdev.org/cdi.

## Acknowledgments

# General issues across components

## *Terminology*

This section briefly outlines some key terms the CDI uses. The CDI draws on thousands of data points and hundreds of indicators, and as such consistent use of terminology can be helpful. In the hierarchy of measures the CDI, it is helpful to distinguish between the following terms:

- **Components** - there are seven components in the CDI - aid, finance, technology, environment, trade, security and migration. Each component's score is a composite of the scores in the sub-components which are themselves made up of indicators
- **Sub-components** - each component is made up of sub-components, for example, the aid component is made up of sub-components on aid quantity and aid quality
- **Indicators** - these are measures used to calculate sub-components. For example, the environment component has three subcomponents: Global climate, sustainable fisheries, and biodiversity & global ecosystems. There are several indicators in each subcomponent. For instance, the sustainable fisheries subcomponent is composed of the fishing subsidies indicator and the ratification of the UN fisheries Agreement indicator.
- **Scores** - this refers to the score assigned to a country's performance. Scores are assigned for country performance: overall; component-level; or at indicator level (see below). There are two types of scores: raw scores and standardised scores. Raw scores are simply the measure of a subcomponent or indicator in the original measurement terms (e.g. percent carbon emissions reduction over 10 years, dollar value public research subsidies, refugees per capita). But given that these scores are made on very different scales, standardising is necessary to enable comparison across indicators and calculation of performance and ranking. Each country's score is therefore standardised as a Z score, with a mean of 5 and standard deviation of 1 (so the vast majority of scores are between 3 and 7). The following methodology, in almost all cases, discusses how the *raw* scores are obtained. Unless otherwise stated (or unless context makes it clear), therefore, it can be assumed that 'scores' refers to raw scores .  Finally, note that some indicators' scores are standardised negatively, which means a lower raw score translates into a higher standardised score. This is true of 'bads' like arms exports or greenhouse gas emissions.
- **Rankings** - these are the relative positions of countries according to their overall score, or a score on one of the CDI's seven components. A country's rank is the position of its standardised score within those of the cohort (i.e. all CDI countries). There are 27 countries in this edition, so a country's rank on the overall CDI, or one of its components, subcomponents, or indicators, ranges from 1 (best) to 27 (worst)

## *Weighting and scaling*

The CDI is a quantitative and indicator-based index. It combines readings on thousands of data points and over a hundred indicators. Since the indicators are not perfectly correlated, countries' standings on the final results are affected by the relative importance the formulas give to the various indicators. In mathematical terms, the results are affected by choices of

both functional form and parameters. Both the CDI designers and commentators have naturally asked whether the CDI makes the best choices.

Our intention is to weight indicators according to the evidence, and our judgement, on their contribution to development. We also try to keep the weights simple - in 5 percent increments - and try to avoid changing them incrementally. In practice, the CDI designers chose to weight some indicators more than others. The weights are backed by many years of expertise and experience in the relevant fields, but in the spirit of dialogue, are nevertheless open to challenge.

At the top level of the CDI hierarchy, where the seven CDI components merge into a single index, the components are equally weighted. In other words, we do not weigh the environment or trade more highly than say migration based on their perceived relative importance. However, we do weight the main component by the inverse of the standard deviations: this way we give less weight to those components with high variance so that outliers do not dominate the index. Because of the prominence of this choice and its potential importance for the final results, this decision has provoked many challenges. For a detailed discussion please refer to the 2013 methodology paper's section on weighting and scaling. One change that we have made since this 2013 methodology is to extend the use of "normalized scores" for all the indicators and the overall component results. This means that the raw indicator values for each country are transformed into a score with a mean of 5, and a standard deviation of 1. This ensures that a very high or low score on a single indicator does not disproportionately affect a country's component, or overall score.

## Missing data

Given the scope of the CDI, for some years and some countries data is not publicly available or has not been reported.

There are some generalized strategies applied in these cases:

- If for the data for a given year was unavailable, we used the most recent year up to a point and depending on the measure. For instance, when measuring Swiss R&D spending, the most recent data available was for 2015. Similarly, the most recent data for migrant inflow to Greece was in 2011. In both cases, that is the data we used.
- When data was missing because CDI countries failed to report their data to say the World Bank or OECD for a number of years, we penalized them for their lack of reporting data. This resulted them in getting the worst score in their cohort plus one standard deviation. The intuition behind this is that it is always be better to report your data than not report it. This year, examples can be seen of this in arms exports in the security component (Australia, Greece, Japan, New Zealand, South Korea) and fishing subsidies in the environment component (Finland).
- There are some indicator specific methods we have used in handling missing data. These are detailed in the relevant indicator descriptions later in this document. They can be found in aid quality, other official flows (finance), and gasoline taxes and fishing subsidies (environment).

## Time series and back calculation

We use the CDI to compare rich countries latest policy performance relative to their peers using the most up to date data. The rankings and scores in previous versions of the CDI are not directly comparable to the latest version as the method of calculation evolves with improvements and data availability.

We do calculate and publish historical values for component scores and the underlying indicators. As far as possible, these use the latest methodology, but are calculated using historical data. Where this is not possible, we include the indicators and scores according to the methodology in use at the time.

For the historic component scores for countries, past scores are standardised (see weighting and scaling above) according to the scores and standard deviations in 2018. In this way, the historic scores are all relative to 2018 (which have an average of 5 and standard deviation of 1).

# Aid component

The aid component is composed of two subcomponents which assess a) the quantity of aid of each donor country and b) the quality of that aid. These two subcomponents are weighted equally.

## Why is aid important for development?

Aid is likely the first policy that comes to mind when considering how rich countries help development beyond their borders. Aid remains an important source of development finance for many developing countries. The OECD report on Fragile States concludes that aid has been the largest and most reliable source of finance for the least developed fragile states over the past decade. In 1969, the Pearson Commission proposed that rich countries should spend 0.7 percent of their Gross National Income on foreign aid. Almost fifty years later, only a handful of countries are meeting this target.

Quantity is not the only aspect that matters in the provision of aid. How aid is provided can have a significant impact on achieving development results. This has been acknowledged by donors in a series of High Level Meetings on aid Effectiveness, the last one taking place in Busan in 2011. These fora contributed to establishing key principles for improving the effectiveness of development assistance. Today, ownership, harmonization, managing for development results, and mutual accountability are standard criteria which donors and recipients use to implement development assistance interventions.

Related CGD work: Aid effectiveness.

## Aid quantity

The Commitment to Development Index is intended to measure the effort of each country – that is, the contribution countries make relative to their size. In 1969, the Pearson Commission proposed that donors should spend 0.7 percent of Gross National Product on foreign aid, for which the definition of official development assistance (ODA) was provided by the Development Assistance Committee (DAC) of the OECD in the same year. This 0.7 percent target was enshrined in a UN resolution on October 24, 1970. In 1993, following the revision to the UN System of National Accounts, GNI replaced GNP as denominator for the target.

Given that there is a widely (though not universally) accepted target for ODA as a share of GNI, we use this ratio in the Commitment to Development Index as our raw score for aid quantity.

## Aid quality

The quality of foreign aid is hard to define and therefore hard to measure – donors and recipients have distinct understandings of what comprises "good" aid, and researchers have struggled to find common ground amidst these competing definitions.[11]

Since 2014[12], the CDI has used the Quality of Official Development Assistance (QuODA) as the main input for calculating an Aid Quality Score (AQS) to assess countries on the quality of their aid. The most recent edition of QuODA consists of 24 indicators measured across 27 bilateral donors (the same selection for CDI countries) and 13 multilateral agencies.[13] QuODA is produced by Caitlin McKee and Ian Mitchell at CGD and more information can be found on the website, the methodology paper, and the data.

The QuODA indicators are grouped into four dimensions that reflect international best practices of aid effectiveness: maximizing efficiency, fostering institutions, reducing the burden on recipient countries, and transparency and learning. The aim of QuODA is to increase the quality of aid by assessing and comparing donor performance against the commitments they have made to improving aid quality.

**Maximizing efficiency** relates to how aid is disbursed across countries and sectors, and its availability for projects and programs in recipient countries. The indicators shed light on the strategic choices made over aid allocations and the extent to which donors implement an efficient division of labour. **Fostering institutions** is about building the institutional strength in recipient countries by using country systems, priorities and approaches. The indicators point to donors' willingness to make long-term investments in strengthening partners' ability to develop and implement their own strategies. They point to the degree to which donors are genuinely prepared to put partners in the driver's seat, as so often promised. **Reducing the burden** on partner countries assesses problems of overlap, waste, and fragmentation among donors. It rewards those who explicitly concern themselves with coordination and collaboration with others. **Transparency and Learning** promotes the power of data and evaluation to generate evidence-based decisions that can improve aid effectiveness. The indicators shed light on whether donors themselves practice the kind of openness in their own activities that they often request of partners.

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[11] See Guillaumont and Rogerson (2014) for discussion of some of the challenges of assessing aid quality.

[12] See Barder, Krylova, and Talbot (2016) for discussion of why the methodology was changed in 2014.

[13] QuODA scores are not available for all agencies through which countries spend their multilateral aid (over 250 "channels" in the OECD Creditor Reporting System). QuODA 2018 assesses 13 multilaterals which account for 74% of multilateral spending of the 27 CDI countries. The multilateral agencies included in the 2018 QuODA edition were selected on the basis of coverage of greatest portion of multilateral spending, data availability, and consistency with previous editions of QuODA.

The 24 QuODA indicators[14] and their data sources are as follows:

- Maximising Efficiency
  - ME1: Share of allocation to poor countries: DAC Table 2a and WDI
  - ME2: Share of allocation to well-governed countries: DAC Table 2a and Worldwide Governance Indicators
  - ME4: High country programmable aid share: DAC Table 2a
  - ME5: Focus/specialization by recipient country: DAC Table 2a
  - ME6: Focus/specialization by sector: OECD Creditor Reporting System
  - ME7*: Support of select global public good facilities: DAC Table 2a & Various Reports
  - ME8: Share of untied aid: OECD Creditor Reporting System
- Fostering Institutions
  - FI1: Share of aid to recipients' top development priorities: OECD Creditor Reporting System and UN My World 2015 survey
  - FI3: Share of aid recorded in recipient budgets: GPEDC Indicator 6
  - FI4: Share of development interventions using objectives from recipient frameworks: GPEDC Indicator 1a, first sub-indicator
  - FI5: Use of recipient country systems: GPEDC Indicator 9b
  - FI7: Share of scheduled aid recorded as received by recipients: GPEDC Indicator 5a
  - FI8: Coverage of forward spending plans/Aid predictability: GPEDC Indicator 5b
- Reducing Burden
  - RB1: Significance of aid relationships: DAC Table 2a
  - RB2: Fragmentation across donor agencies: OECD Creditor Reporting System
  - RB3: Median project size: OECD Creditor Reporting System
  - RB4*: Contribution to multilaterals: OECD DAC Table 1
- Transparency & Learning
  - TL1: Membership in IATI: IATI
  - TL2: Making information on development funding publicly accessible: GPEDC Indicator 4
  - TL3: Recording of project title and descriptions: OECD Creditor Reporting System
  - TL4: Detail of project description: OECD Creditor Reporting System
  - TL5: Reporting of aid delivery channel: OECD Creditor Reporting System
  - TL6: Completeness of project-level commitment data: OECD Creditor Reporting System
  - TL8: Share of evaluations planned with recipient: GPEDC Indicator 1a, fourth sub-indicator

*Only applies to bilateral aid quality (not assessed for multilateral agencies)

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[14] The numbering of indicators is not always consecutive since some indicators have been dropped since the previous edition of QuODA. Remaining indicator numbers were kept the same to be comparable to previous editions. More information can be found in the QuODA Methodology.

The multilateral agencies assessed by the 2018 QuODA include:

- African Development Fund (AfDF)
- Asian Development Fund (AsDF)
- European Development Fund and development funding from EU budget (EU Institutions)
- Global Alliance for Vaccines and Immunisation (GAVI)
- The Global Fund to Fight AIDS, Tuberculosis and Malaria (GFATM)
- International Development Association (IDA)
- Inter-American Development Bank Fund for Special Operations (IDB Special)
- International Fund for Agricultural Development (IFAD)
- The Joint United Nations Programme on HIV/AIDS (UNAIDS)
- United Nations Development Programme (UNDP)
- United Nations Population Fund (UNFPA)
- United Nations Children's Fund (UNICEF)
- World Food Programme (WFP)

Note that for the seven QuODA indicators that use GPEDC data, Greece, Hungary and Poland have missing values. The reporting onus is on the aid recipient countries, so for cases of lack of reporting it is unfair to penalise donor countries. These indicators are omitted from the calculations of the bilateral aid quality average scores for these three donor countries.

For more information on QuODA, please consult the QuODA 2018 Methodology.

**Calculating Aid Quality Scores**

The aid quality subcomponent calculates an Aid Quality Score (AQS) using QuODA as the main input. The AQS is a combination of how a country performs for its bilateral aid and multilateral aid on the QuODA indicators.[15] For the bilateral aid quality score, we use the country's simple average across the 24 QuODA indicators. For the multilateral aid score, we take the average of how multilateral agencies perform across 22 QuODA indicators[16] and then weight those scores by how much a country contributed to that multilateral agency.[17] We acknowledge that placing an equal weight on each of the indicators is minimally arbitrary: it reflects a lack of good evidence about the relative importance of these characteristics. Equally weighting all indicators is unlikely to reflect their actual relative importance, but we feel it recognises that each indicator has some relevance and, more broadly, gives an indication of aid quality. It also has the feature of relative simplicity. Using

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[15] This approach was developed by Barder, Krylova, and Talbot (2016).

[16] Two QuODA indicators are not calculated for multilateral agencies since by definition they only apply to country donors, ME7 for support of select global public goods facilities and RB4 contribution to multilaterals.

[17] The data to compute these calculations can be found on the "Disbursements" tab of the publicly available data for the CDI aid component.

the average scores, we then weight the bilateral and multilateral aid quality scores by the relative proportions that donors spent through those channels.

QuODA scores are not available for all agencies through which countries spend their multilateral aid (there are over 250 in the DAC Creditor Reporting System). QuODA 2018 assesses 13 multilaterals which account for 74% of multilateral spending of the 27 CDI countries. Combined with bilateral spending, the AQS accounts for 93% of ODA disbursements of the 27 CDI countries.[18]

To account for multilateral aid spent through agencies that are not scored by QuODA, we apply the weighted average of multilateral agency scores to the portion of unscored multilateral spending for a given country. Algebraically, it is equivalent to assigning the average multilateral score to all multilateral spending. Therefore, we present the average multilateral score for each country, which is then multiplied by the proportion of aid spent multilaterally.[19]

In a simplified form, the score for aid quality is calculated as:

*AQS = (score for bilateral aid \* proportion spent bilaterally) +*

*(score for multilateral aid \* proportion spent multilaterally)*

## Further Reading

- QuODA 2018 Methodology
- How Much and How Well: Revisiting the Aid Component of the Commitment to Development Index
- Europe Beyond Aid: Assessing Europe's Commitment to Development Assistance
- Aid Component Data

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[18] 21 CDI countries achieve at least 90% coverage of aid spending. Spain has the highest aid spending coverage at 97%. South Korea has the lowest coverage at 80%.

[19] This approach is new for the CDI 2018. Previously, the calculation used a simple average of the QuODA score of each multilateral agency that a donor disbursed aid. This resulted in an unweighted average which was then applied to the portion of multilateral spending on unscored agencies. However, we think it more accurately represents a donor's allocation behaviour to weight multilateral aid quality scores by the proportion disbursed to each multilateral to apply to each donor's unscored portion of multilateral spending.

# Finance component

The finance component is composed of two subcomponents which assess countries' transparency in the finance sector and their efforts to support investment in the developing world. Both sub-components have an equal weight in the overall finance component and each includes a number of different indicators.

## Why is financial transparency and support to investment important for development?

Foreign direct investment is the largest source of external financing for many developing countries. Rich countries' policies that either support or impede investment beyond their borders can have a substantive effect on the wellbeing of many developing country citizens. Foreign investment can contribute to the development of infrastructure, housing, transport, energy supply and many other areas. However, the quantity of investment is not the only important dimension of investment as a development tool. It is also important that measures are in place which ensure that the environment and the general welfare of those affected by the investment is properly safeguarded.

International financial flows can also be used to facilitate crime, corruption and tax evasion; with illicit financial flows from developing countries ending up as assets held in the financial institutions and property markets of rich countries. States now have legal duties to screen, trace, freeze, seize and return illicit wealth, and to detect, prevent and punish foreign bribery. This supports the integrity of investment, public accountability and revenue raising in developing countries. There is therefore a clear case for including an assessment of whether countries are making and meeting effective commitments on financial integrity and combating illicit financial flows as part of the CDI.

Related CGD work: Finance and investment.

## Investment

The investment subcomponent is based on three parts, and these, with their respective weights in this subcomponent, are: policy inputs, as measured by international commitments (20%); policy implementation, as measured by international investment agreements (20%); and policy outcomes, as measured by other official flows (10%).

### *International commitments*

Policy inputs are measured by the international commitments a developed country takes on. This indicator asks if a CDI-country takes part in the OECD anti-bribery convention, how a country deals with the OECD Guidelines on Multinational Enterprises, (whether a national contact point has been set up), and whether a National Action Plan on business and human rights has been put in place. Countries are also rewarded for being members of EGPS, EITI, KPCS, and/or ITTO.

The Extractives Global Programmatic Support (EGPS) Multi-Donor Trust Fund provides grants and technical assistance to developing countries to help improve governance of their

natural resources. By so doing, the EGPS donor countries encourage resource-rich countries to use their resources sustainably and transparently for poverty reduction and long-term economic growth. The Fund is administered by the World Bank and supported by partner countries and institutions. The list of country donors is available here.

The Extractive Industries Transparency Initiative (EITI) promotes transparency in the management of natural resources. If a country participates in EITI, its extractive companies (oil, gas, mining) are required to publish what they pay to the governments of countries they operate in, and governments that sign up to EITI are obliged to disclose what they receive from such companies. A multi stakeholder group monitors the process in each participating country. A list of participating countries and institutions can be found here.

The Kimberley Process Certification Scheme (KPCS) is a joint initiative of governments, industry, and civil society that aims to eliminate the trade of conflict diamonds. Conflict diamonds are those whose sales contribute to funding armed conflicts. A full list of participating countries is available here.

The International Tropical Timber Organization (ITTO) is an intergovernmental organization established in 1986 with the aim of promoting conservation and sustainable management, use, and trade of tropical forest resources. A full list of participating countries is available here.

**Scoring system**

A country's raw score on International commitments is the sum of its scores on the constituent indicators. The scoring system for these commitments are as follows:

A country's compliance with the **OECD anti-bribery convention** is built up over time and in phases, and its raw on this component is therefore cumulative: its compliance score from current year is added to the total of the previous years' scores. The current year's score is between -1 and 2 depending on its degree of compliance, and the year being assessed, as different phases of the convention over the years have required different assessment criteria.

| Phase I: Convention in Force (1999-2001) | Phase II: National Legislation Adapted (2002-2009) | Phase III: Companies Investigated and Prosecuted (2010-2015) | Phase IV: enforcement and cross-cutting issues tailored to specific country needs, and outstanding recommendations from Phase 3 (2016 – present) |
|---|---|---|---|
| **Convention is not in force: 0** | Not evaluated / limited progress: 0 | Not evaluated / limited progress: 0 | Not evaluated / limited progress: 0 |
| **Convention is in force: 1** | Adaptation in progress: 1 | Investigation and prosecution in place: 1 | Not all of outstanding recommendations addressed, improvement: 1 |
| | Adaptation completed: 2 | Reinforced investigation and prosecution: 2 | All: 2 |

Finally, a country is deducted 1 point if it demonstrates resistance to evaluation.

A country's score on the **Multinational Contact Point (MCP)** is rolling on a single year basis. For any given year, a country receives 1 point for adherence to each of the following criteria:

- Adherence to the OECD Declaration

- NCP formed

- Active participation in NCP peer reviews

A country's score on the **National Action Plan (NAP)** is the sum of its score on two questions:

| Q1: Has the government responded to the Questionnaire on their actions on business and human rights? | Q2: Has the government adopted a National Action Plan on business and human rights? |
|---|---|
| No: 0<br>Yes: 1 | No: 0<br>Drafting: 1<br>Yes: 2 |

For being a member of the various programmes and initiatives, a country receives the following points: **EGPS** (+3), **EITI** (+1), **KPCS** (+1), or **ITTO** (+1).

## International investment agreements

Policy implementation of investments is measured by the quality of International Investment Agreements (IIA) a CDI-country has signed. IIAs include measures designed to protect the investments made by investors of a state party in the territory of another state

party under international law. To attract and facilitate foreign direct investments (FDI), IIAs therefore offer foreign investors legal security and protection against most of the risks that may occur. However, there are concerns that these agreements protect the interest of the investors as opposed to the general interests of the recipient countries such as human rights or the protection of the environment. Therefore, IIAs need to find an equilibrium between ensuring that countries retain their right to regulate for pursuing public policy interests (including sustainable development objectives) while contributing to a favorable investment climate and protecting foreign investors from unjustified discrimination measures by the host state.

Data on IIA was analyzed by CIECODE. The IIAs analyzed are those in which the parties are, on one side, one of the CDI countries and, on the other, a developing country (according to the OECD's list of ODA recipient countries). For each of the 27 CDI countries, the analysis includes the latest three IIAs with a developing country. When analyzing regional agreements, the score is extended to all the parties involved as though it were an international investment agreement.

For assessing the 'sustainable quality' of the IIA, the preamble, the Fair and Equitable Treatment (FET) clause and the investor-state dispute settlement system (ISDS) were analyzed. Any other general clause in the Treaty that extends its application to these three clauses was also analyzed. Each of the three dispositions analyzed was given a score ranging from 0 to 2 depending on how much their content contributes to the capacity of the agreement to promote sustainable development and foreign investments. The analysis also assessed whether the IIA protects the State's right to regulate for pursuing legitimate sustainable development objectives.

You can read more about our methodology in Ciecode's methodological note on International Investment Agreements. The supplementary spreadsheet can be found here.

### Other official flows

This indicator measures policy outputs through transactions from official sectors of CDI countries to countries on the OECD list of aid recipients which do not meet the conditions for eligibility as Official Development Assistance (ODA). This is either because they are not primarily aimed at development, or because they have a grant element of less than 25 percent. Therefore, these financial flows are reported as part of the investment subcomponent. Data derives from the OECD aid statistics and is expressed as a percentage of GNI.

Note that where we have no country year data in other official flows, we have assumed that no OOF was provided by that country in that year.

## Financial Secrecy

The Financial Secrecy subcomponent of the CDI is based on indicators drawn from the Financial Secrecy Index (FSI), and directly from OECD and Financial Action Task Force (FATF) peer reviews and mutual evaluations. The FSI is published biannually by Tax Justice Network. It scores jurisdictions based on information on their laws, regulations and

cooperation with information exchange processes, and it is used to calculate a secrecy score for each country. The FSI was developed to provide a means to assess the extent to which jurisdictions provide harmful financial and legal secrecy to non-residents, providing a 'criminogenic environment', which enables illicit financial flows (including tax evasion). The current iteration of the FSI has expanded to include twenty indicators, but they do not all relate to secrecy and illicit activities.

In adapting the FSI indicators for the CDI we have considered: whether each indicator relates to financial secrecy/ illicit financial flows; whether the criteria are well supported by international norms or that it measures good practice in relation to preventing illicit financial flows; and whether the data appear to be reliable. On this basis we have selected 8 indicators (including two which are modified from the FSI).

While the FSI indicators are rated on a scale for 0 to 1, where 0 is low secrecy and 1 is high secrecy, this direction is reversed for the CDI so that a low score relates to high secrecy (i.e. poor policy effort on financial integrity) and a high score relates to low secrecy (i.e. high policy effort on financial integrity). For all countries except for the UK, the raw score for the financial secrecy subcomponent is the simple average of that country's score on the 8 indicators. The UK's score is arrived at somewhat differently. Each of the UK's overseas territories[20] and the UK itself are scored independently, and then weighted according to the amount of British territory they comprise. The weighted scores are then summed to give the UK's final score.

Note that there are two aspects to the scores that the Financial Secrecy Index uses to assess countries: the Key Financial Secrecy Indicators (KFSI) as measures of secrecy and the global scale weight (a measure of jurisdictions' importance in the total global trade in financial services). In the CDI, in order to make financial secrecy policies comparable across all countries regardless of scale, we only use the former, the scores on the individual indices of secrecy.

The indicators of financial secrecy used are:

### Limiting banking secrecy

This indicator assesses whether a jurisdiction enables banking secrecy, where absence or inaccessibility of banking information is also considered a form of banking secrecy. For a country to obtain a full score on this indicator, the jurisdiction must ensure that banking data exists, and that competent authorities (i.e. the government authority designated as being competent to exchange information with other jurisdictions under double tax conventions or tax information exchange agreements) have effective access to this data. This means that tax authorities can obtain account information without the need for authorization from a separate institution, such as a court, for example, and that there are no undue notification requirements or appeal rights against obtaining or sharing such information.

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[20] Anguilla, Bermuda, British Virgin Islands, Cayman Islands, Gibraltar, Guernsey, Isle of Man, Jersey, Montserrat, Turks and Caicos Islands

For further details on this indicator, please consult the [Financial Secrecy Index Methodology](#).

### Public Statistics

This indicator measures the degree to which a jurisdiction makes publicly available ten relevant statistical data sets about the jurisdiction's economic and financial engagement with the wider world through trade, investment and tax. Crucially, bilateral disaggregation ensures that the data offers valuable insights to every partner jurisdiction.

For further details on this indicator, please consult the [Financial Secrecy Index Methodology](#).

### Anti–money laundering

This indicator examines the extent to which the anti-money laundering regime of a country is considered effective by the [Financial Action Task Force (FATF)](#), the international body dedicated to tackle money laundering and evaluates countries' compliance with FATF recommendations. The assessment is based on peer-reviews evaluating the implementation of [FATF recommendations](#) concerning the laws, institutional structures, and policies deemed necessary to counter money laundering and terrorist financing. Peer reviews are carried out in five-year cycles. The third round of [mutual evaluations](#) was completed in 2012. Each recommendation taken from the FATF's [forty recommendations](#) concerning the laws, institutional structures, and policies considered necessary to address money laundering and terrorist financing is given an equal weight in this methodology, a 100 percent rating indicates full compliance, whereas a 0 percent rating indicates a country is deemed wholly non-compliant.

For further details on this indicator, please consult the [Financial Secrecy Index Methodology](#).

### Automatic information exchange

The indicator assesses whether a country has signed the [Multilateral Competent Authority Agreement](#) (MCAA) which provides the legal framework to engage in automatic exchange of information.. Under the MCAA jurisdictions agree to automatically provide information to the home jurisdiction, about the bank accounts (and other reportable account) held by foreign tax residents in their country. This includes details of the owner of the account, the account number, balance at the end of the year, and any income received. A score of 1 is given if a country has signed the MCAA and has committed to start exchanging information in 2017. A score of 0.5 is given if a country has signed the MCAA and committed to start exchanging information in 2018. A score of 0.25 is given if a country has not yet signed the MCAA but has committed to start exchanging information in 2017. A score of 0.10 is given if a country has not signed the MCAA but has committed to start exchanging information in 2018. No score is awarded if a country has neither signed the MCAA nor committed to start exchanging information.

For further details on this indicator, please consult the [Financial Secrecy Index Methodology](#).

### Bilateral treaties

The indicator assesses the extent to which a jurisdiction has signed and ratified bilateral treaties conforming to the 'upon request' information exchange standard developed by the OECD and the Global Forum with 53 other countries, and/or whether the jurisdiction has signed and ratified the Amended Council of Europe / OECD Convention on Mutual Administrative Assistance in Tax Matters. This is important because tax authorities around the world face immense difficulties when trying to secure foreign country-based evidence relating to suspected domestic tax evasion or tax avoidance. Exchange of information provisions allow jurisdictions to obtain information from tax authorities in other countries. The 'upon request' provisions can either be tax information exchange agreements (TIEAs) or full double taxation agreements (DTAs) whose scope extends far beyond information exchange.

For further details on this indicator, please consult the Financial Secrecy Index Methodology.

### International legal cooperation

The indicator measures the degree to which a country engages in international judicial cooperation on money laundering and other criminal matters. The indicator assesses the level of country's compliance with the Financial Action Task Force recommendations. The Financial Action Task Force (FATF) is the international body dedicated to counter money laundering. In 2003, the FATF established its Forty recommendations concerning the laws, institutional structures, and policies considered necessary to address money laundering and terrorist financing.

For further details on this indicator, please consult the Financial Secrecy Index Methodology.

### Extractive country-by-country reporting

Another area where a modified indicator has been adopted is country-by-country reporting. Under the G20/OECD led Base Erosion and Profit Shifting (BEPS) programme large multinational companies are required to submit annual an annual country-by-country report ('CBCR') to their home tax authority, giving headline figures on revenues, profits, assets, employees and taxes paid in each jurisdiction. It is intended as a risk assessment tool for revenue authorities. The international agreement is for this information to be kept confidential and shared between revenue authorities using exchange of information protocols. A number of campaigning organisations argue that companies should be required to publish these country-by-country reports. The Financial Secrecy Index (FSI) includes criteria that countries should require full annual public country-by-country reporting by corporations of all sectors. However, this has not been adopted by the CDI since it is not the basis of current international agreement or expert consensus, and it is not clear that this is relevant to illicit financial flows. The FSI does offer a partial score for countries that have these requirements for public country by country reporting in particular sectors. There is also specific justification for publication of country by country reports on extractive sector

revenues, to enable public and parliamentary scrutiny of natural resource revenues which are often linked to corruption. The CDI therefore adopts this part of the [relevant FSI indicator](#), and makes this into a full indicator.

For further details on this indicator, please consult the [CGD Financial Secrecy Methods Paper](#)

*Beneficial ownership*

A key issue which is covered by several indicators in the FSI is the registration of beneficial owners (i.e. the natural person(s) who ultimately owns or controls a company, trust or partnership or on whose behalf a transaction is being conducted). This is a foundation for anti-money laundering and anti-tax evasion efforts since anonymously owned shell companies can be used to launder illicit proceeds of corruption, tax evasion and crime. Legal and beneficial ownership information can assist law enforcement and other competent authorities by identifying those natural persons who may be responsible for the underlying activity of concern, or who may have relevant information to further an investigation. This allows the authorities to "follow the money" in financial investigations. Relevant international agreements on this are: [Financial Action Task Force (FATF) Recommendation](#) 24 (or 33 in previous numbering) and [Global Forum on Transparency and Exchange of Information for Tax Purposes](#) Criteria: A.1. The FSI criteria on beneficial ownership go considerably beyond the FATF and Global Forum recommendations in terms of defining the threshold for beneficial ownership (down to the level of one share). It is not clear whether the 'no threshold' approach advocated by the FSI would be proportionate in administrative and enforceability terms. At the same time the criteria do not consider the reliability of the information (i.e. self-declared vs verified systems). The FSI's measurement on this issue also allows fairly benign practices (such as the existence in theory of historical 'bearer shares') to deliver the highest secrecy score. The CDI therefore uses an indicator more directly based on compliance with internationally agreed standards. The schedule of peer reviews means that there is no single rating which can be used. The solution chosen for this addition of the CDI is to use the compliance rating most recent of the relevant recent FATF or Global Forum reviews for each jurisdiction. These are then converted into numerical scores.

 For further details on this indicator, please consult the [CGD Financial Secrecy Methods Paper](#)

## Further Reading

- [Europe Beyond Aid: The Role of European Countries in Fostering Development through International Investment](#)
- [Europe Beyond Aid: Illicit Financial Flows: Policy Responses in Europe and Implications for Developing Countries](#)
- [Illicit Financial Flows and the 2013 Commitment to Development Index](#)
- [Section on finance in the CDI methodology paper from 2013](#)
- [CGD Financial Secrecy Methods Paper](#)
- [Finance spreadsheet](#)

# Technology component

The technology component is composed of two subcomponents which assess countries' efforts on technology creation and knowledge sharing. Countries' efforts in research and development are assigned two thirds of the weight, and their openness to share and give access to technology and innovation is assigned one third.

## Why is technology creation and access to it important for development?

Technology is an essential factor in economic and human development, and not just for the poor. Advances in medicines, information and communication technology, sustainable energy, for example, contribute to improving the lives of all of us. Rich countries have an important role to play in this - the internet, mobile phones, vaccines, and high-yielding grains were all invented by rich-country researchers and exported elsewhere, where they have improved—and saved—many lives. Accessing such knowledge is one way in which poor countries can catch up with the wealthy ones. Donor country governments can contribute to technological development and diffusion of knowledge and innovation by publicly funding research and development activities and incentivizing private research through tax incentives.

Although technology can help development, innovations and technologies that could help poorer countries to develop are often protected by intellectual property rights (IPR), which can restrict developing countries' access to them. IPRs aim to incentivize research and innovation by granting producers of new technologies a monopoly over that technology for a specified period. But a developmental IPR regime should balance this incentive with the need to sufficiently enable others to make use of technologies, to assist developing countries in accessing important technologies, and contribute to the advancement of human knowledge.

For more information on intellectual property rights, please consult CGD's paper on technology and knowledge transfer.

Related CDG work: Technology and Development

## Government support to research and development (R&D)

The two following indicators comprise the Government Support for R&D subcomponent. Their results are summed to give the score for this subcomponent, which accounts for two-thirds of the weight of the technology component.

### Government R&D as share of GDP (weighted)

This indicator considers government expenditures on research and development. Government support is measured in budgetary expenditure on various areas of research, expressed in international (PPP) US dollars (to allow cross country comparison), from OECD data. The following areas of development as reported to the OECD are included: Agriculture, Culture, Defense, Education, Energy, Environment, Exploration and Exploitation of Earth,

Exploration and Exploitation of Space, General advancement of knowledge : R&D financed from other sources than GUF, General Advancement of Knowledge: R&D financed from General University Funds (GUF), Health, Industrial Production and Technology, Political and Social Systems., Transport, telecommunication and other infrastructures. Government expenditure on R&D in defense is discounted by 50 percent because not all defense research and development has benefits for poorer countries. Expenditure across these 14 areas is summed and expressed as a share of GDP (also expressed in PPP dollars, from the World Bank's WDI data). The formula is thus:

$$\frac{1}{GDP} \cdot (0.5E_d + \sum_{i=1}^{13} E_i)$$

Where:
Ed = dollar (PPP) expenditure on defence R&D
Ei = dollar (PPP) expenditure on area i, (i to n being the 13 non-defense R&D areas)
GDP = Current dollar GDP, PPP

### Tax incentives for private R&D (weighted)

The indicator measures the level of government support for private research and development through tax incentives. This is expressed by the B-index, published by the OECD. As explained by the OECD, the B-index is a measure of the level of pre-tax profit a "representative" company needs to generate to break-even on a marginal, unitary outlay on R&D, considering provisions in the tax system that allow for special treatment of R&D expenditures.

The raw score for tax incentives is expressed as a percentage rate and the formula for calculating it is:

$$0.75 \cdot (BERD \cdot Subsidy\ rate)$$

Business R&D expenditures are expressed as share of GDP (BERD as a percentage of GDP from this dataset) and multiplied this by the average level of tax subsidies for profitable small and large enterprises (from this dataset – direct data link). The result is then discounted by 25 percent, on the premise that private R&D is assumed to be commercially focused and therefore not wholly contributing to development.

## Intellectual property rights

The following three indicators together comprise the IPR subcomponent. The overall subcomponent's score is a weighted average of the three *standardised* scores (that is, raw scores standardised to a mean of 5 with standard deviation obtained from the cohort's scores). The weights applied are:

- Patent Coverage: 20%;
- "TRIPS+", anti-circumvention rules, and database protection: 50%,
- Rights loss provisions: 30%.

The evaluation on countries' scores (scoring method outlined below) on each of the indicators is done by Walter Park et al on a consultancy basis for CGD. Each of the following indicators has sub indicators, which measure the degree to which CDI countries place restrictions on developing country governments, with scores ranging from 0 (very open) to 1 (very restrictive). The score for each indicator is the sum of the scores of its sub indicators, which are then standardized *negatively*, that is, the higher the score (the more restrictive), the lower the resulting standardised CDI score to which it is converted.

### Patent coverage

The indicator measures countries' patent policies on a) plant and animal varieties and b) software. As explained by Walter Park et al, patents give the manufacturer the power to charge higher prices than would otherwise exist under free competition. The patenting of plant and animal varieties can significantly affect people's access to goods such as medicines, and innovations in agriculture. Similarly, the patenting of software limits poor countries' access to and usage of new technologies.

### 'TRIPS+', anti-circumvention rules, database protection

This indicator combines an assessment of CDI countries ' a) TRIPS+, which are IPRs provisions that are more stringent than those required by the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS), the international legal agreement between all member nations of the WTO, designed to protect Intellectual Property Rights internationally; b) Anti circumvention rules; and c) Database protections. Which will be discussed here in turn.

Firstly, as explained by Walter Park et al, developed countries often enter into agreements with developing country partners which go beyond TRIPS. These provisions sometimes result in the developing economies adopting an IPR system that is stronger than one that is appropriate for them at their stage of economic development and this can deter foreign direct investment and constrain local innovators. Secondly, anti-circumvention rules prohibit the circumvention of technological barriers for using a digital good in certain ways which the rightsholders do not wish to allow. While anti-circumvention rules against tampering with technology protection measures protect IPR owners against piracy, it is important that the rules and penalties not be so harsh that they excessively prevent all learning and imitation. Anti-circumvention rules can prevent reverse engineering and opportunities for learning by doing, for example. Thirdly, some developed economies have granted patent-like protection to compilers of databases, even if the data was already in the public domain or created with public funds. Strong database protections reduce the flow of useful, public knowledge to developing economies.

### Rights loss provisions

This indicator combines an assessment of rich countries IPRs provision which relate to a) compulsory licensing; b) patent revoking due to discontinuing working; c) patent opposition system; and d) exceptions for research or defense purposes. As explained by Walter Park et al, compulsory licensing refers to the situation in which a government compels a patent or copyright holder to license the invention or work to a third party. This a useful option for a

government that wishes to respond to a lack of suppliers (or unwilling suppliers) for serving a specific market need, such as vaccines, or for responding to a public health crisis. Governments can also revoke a patent if the holder is not exploiting it or has never exploited it but is simply hoarding the right, perhaps as a speculative strategy, and preventing related innovation and progress in the country in the process. A patent opposition system enables third parties to challenge the validity of a patent grant (within a given time limit) which helps to ensure that invalid patents are not issued, which could otherwise tie up the supply of a good or an innovation. Research exemptions allow firms to 'infringe' a patent if doing so is necessary for nation al defence or for research and experimental purposes or and help prevent patent rights from inhibiting follow-on innovations.

A CDI country is assessed on the degree to which it compels developing country partners to adopt rights loss provisions that remove the legal ability of the governments of these countries to use such measures. As above, each of these four sub-indicators is given a score of between 0 and 1 and the results are summed to give the score for the rights loss provisions indicator.

## Limitations and issues

We outline some potential future methodological extensions in [section B of our 2017 technology component methodological note](#).

## Further Reading

- [2017 IPR methodological description](#)
- [Europe Beyond Aid: Evaluating Europe's Contribution to the Transfer of Technology and Knowledge to Developing Nations](#)
- [Section on technology in the CDI methodology paper from 2013](#)
- [Components of a Proposed Technology Transfer Index: Background Note from 2005](#)
- [Technology spreadsheet](#)

# Environment component

The environment component is composed of three subcomponents. These subcomponents and their weights are: environmental policies on global climate (60%); sustainable fisheries (10%); and biodiversity and ecosystems (30%).

## Why is protection of the environment important for development, and for all of us?

A healthy environment is a necessity for all, poor countries and rich. While wealthy countries bear the most responsibility for creating anthropogenic climate change, the impact on poor countries is much more damaging. Many of these countries are in regions where the most adverse effects of climate change manifest.

Many of the world's poor depend heavily on their surrounding environment and ecosystems to meet their daily needs. Healthy ecosystems are source of clean water and energy, they provide income opportunities and shelter, they are a source of treatment and protection, and biodiversity plays a central role in sustaining food security. Logging as well as increasing demand for arable land are among the main causes of deforestation.

Rapid depletion is a particular problem for global fish stocks, which are becoming increasingly overexploited, partly because demand for fish remains high in rich countries. Fishing subsidies provided by rich countries result in overfishing, which has a negative impact not only on ocean's decreasing biodiversity, but also on the livelihoods of communities dependent on these resources.

For more information on why rich countries policies matter for the environment, please see our paper with the Ecologic institute .

## Global climate

The global climate subcomponent is comprised of six indicators, and these indicators are given a direct weight in the environment component which sum to 60 percent. They are: Fossil fuel production (5%); Greenhouse Gas Emissions (10%); Change in Greenhouse Gas Emissions (15%); Gasoline Taxes (15%); Consumption of Ozone-Depleting Substances (10%); and Ratification of the Paris Agreement (5%).

### Fossil fuel production

The indicator is used to capture the idea that responsibility for greenhouse gas emissions lies not only with consumers, but also with producers. The indicator penalizes those countries which extract fossil fuels, namely oil, gas and coal. Data on production come from BP Statistical Review of World Energy. Volumes of production are converted to $CO_2$ emissions equivalent to give a raw score for GHG emissions and fuel production per capita (in tons CO2 equivalent). Population data come from the World Bank's World Development Indicators

## Greenhouse gas emissions

The indicator assesses the level of greenhouse gas emissions per capita of a country. Greenhouse gas Data come from UNFCCC Greenhouse Gas Inventory Data. The data used are total GHG emissions including net emissions from land use, land-use change and forestry (LULUCF), as this is a more complete measure of emissions. Population data come from the World Bank's World Development Indicators. This indicator is standardised negatively, that is, lower greenhouse gas emissions result in a higher standardised score.

## Change in greenhouse gas emissions

The indicator assesses the change in the level of intensity of greenhouse gas emissions per unit of GDP over ten years. The change is measured using "least squares" decline rates for the last 10 years of available data. If the declines in emissions/GDP were constant in percentage terms over time, then graphs of the log of emissions/GDP over time would be perfectly linear. In reality, they are not, so log emissions/GDP is regressed on time to find the best fit, and the corresponding average decline rate. This least squares approach, in contrast to the more obvious approach of looking at the difference between first and last years, reduces sensitivity to aberrations such as a cold winter in an end-point year. To eliminate both currency and inflation differentials from the measures of output in order to make these comparable across country and time, GDP figures are expressed in real terms on a purchasing power parity (PPP) basis (data come from the World Bank's World Development Indicators). Emissions figures here too consider land use and land use change and come from UNFCCC Greenhouse Gas Inventory Data.

## Gasoline taxes

The indicator assesses the level of tax burden on gas prices, specifically those on premium unleaded (RON 95). Data come from the OECD publication Energy prices and Taxes. As Premium unleaded (95 unleaded) data is unavailable for Japan, we use data for regular unleaded. The raw score on this indicator is expressed as $US cents per litre tax, and is extrapolated form the source data's by-country measures of gasoline tax rates and average gasoline prices expressed in US dollars. This indicator is standardised negatively.

## Reduction of emissions of selected ozone-depleting substances

Two international agreements - the Vienna Convention (1985) and Montreal Protocol (1987) – aim to reduce the consumption of ozone depleting substances and both agreements have been universally ratified. This indicator looks at per capita consumption of nine ozone depleting substances, specifically Chlorofluorocarbons (CFCs), Halons, Other Fully Halogenated CFCs, Carbon Tetrachloride, Methyl Chloroform, Hydrochlorofluorocarbons (HCFCs), Hydrobromofluorocarbons (HBFCs), Bromochloromethane, and Methyl Bromide. Each country's consumption of these is expressed in tonnes[21] of Ozone Depleting Potential (ODP). A country's raw score on this indicator is the sum of its ODPs across all nine

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[21] Metric tonne = 1,000 kg

substances, expressed per capita (in grams per person). This indicator is standardised negatively.

Data on ozone output come from Ozone Secretariat's Data Center, population data come from the World Bank's World Development Indicators. Note that individual country level data was not available for EU member states, so EU emissions were divided by EU population and this raw score was given to all EU member states.

### Paris Agreement ratification

The Paris Agreement, which was adopted in December 2015, succeeds the Kyoto Protocol as the most ambitious climate change agreement to date. The agreement was negotiated within the United Nations Framework Convention on Climate Change (UNFCCC). The Paris Agreement is the first comprehensive climate agreement and its main aim is to hold the increase of the global temperature to 2°C relative to pre-industrial levels. The agreement entered into force in November 2016. All CDI countries have ratified the agreement. A comprehensive list of all countries which have ratified the agreement can be found here. An evaluation on the Paris agreement by CGD experts can be found here.

All countries have ratified the convention, so all countries get the maximum score of 5.

Note that the data on ratification predate the USA's more recent decision to pull out of the Paris Agreement, so the USA still gets credit on this indicator in the 2018 CDI.

## Sustainable fisheries

The sustainable fisheries subcomponent has two subcomponents, fishing subsidies and ratification of the UN fish stocks agreement, which each have a 5 percent weight in the environment component.

### Fishing subsidies

Fishing subsidies often result in overfishing, which leads to depleting fishing stocks and can have a negative impact on the livelihoods of communities dependent on these resources. The raw score for this indicator is expressed as a percentage subsidy rate. This is obtained by measuring the OECD's Fisheries Support Estimate (direct data link, which uses fisheries support estimate, Budgetary, USD), which is expressed in dollars, as a proportion of the dollar value of total fisheries output (obtained from OECD - national landings in domestic ports plus national landings in foreign ports). If a country did not report its fishing subsidies its lack of transparency is penalized: it gets the score of the worst performing country plus one standard deviation. This indicator is standardised negatively. Note that landlocked countries are recorded as giving zero fishing subsidies.

### Ratification of Fish Stocks Agreement

The UN agreement for the Implementation of the Provisions of UNCLOS relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks (UNFSA) aims to establish principles for the conservation and management of these fish stocks through enhanced cooperation among countries while recognizing the special

requirements those countries whose economic livelihoods to great extent depend on fisheries resources. A full list of ratifying countries is available here. A country simply gets 1 point for ratifying this agreement and 0 for not ratifying it. These raw binary scores are then standardized as Z scores with mean 5 and a standard deviation of 1.

## Biodiversity and global ecosystems

This subcomponent contains two indicators which each have a weight of 15 percent in the environment component: Biodiversity treaties participation and tropical wood imports.

### Biodiversity treaties participation

The indicator evaluates how countries fulfil their monitoring and reporting requirements of key international biodiversity agreements. Four biodiversity agreements are considered:

1. Convention on Biological Diversity (CBD)
2. Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)
3. Ramsar Convention on Wetlands of International Importance
4. Convention on Migratory Species (CMS)

CDI Countries' commitment to biodiversity is measured with the following scoring system (per agreement): A country receives 2 points if the required annual/biannual report is submitted without errors and on time, 1 point if it is late and/or with errors and no points if the country fails to submit a report or is not a member. A country's raw score on this indicator is then the average of its points across the for conventions.

### Tropical wood imports

About one third of tropical timber imports are illegally produced and this has serious environmental and social impacts: the total amount of carbon emitted due to tropical deforestation is estimated to be 1.5 Gigatons per year - which is equivalent to about 20 percent of global anthropogenic emissions. Tropical timber imports per capita are an indicator of countries' indirect support to such logging.

A country's raw score on this is its total imports of tropical woods (commodity codes 44 and 45 on Comtrade) from non-CDI countries. Because most tropical wood arrives at a few major European ports and is then transported to other countries, and because imported timber is registered to the country by which it enters the EEA, rather than to the country in which it is ultimately consumed, all EEA countries receive the same score on this, which is derived from total EU plus Norway & Switzerland imports from non-CDI countries.

This indicator is standardised negatively. Data come from the UN Comtrade database.

## Further Reading

- [Europe Beyond Aid: Assessing European Commitment to Global Environment](#)
- [An Index of Rich-Country Environmental Performance: 2005 Edition](#)
- [Section on environment in the CDI methodology paper from 2013](#)
- [Environment spreadsheet](#)

# Trade component

The trade component is composed of indicators which assess countries' policies facilitating international trade in goods by lowering tariffs, reducing agricultural subsidies to rich countries' farmers, enabling trade in services and minimizing red tape.

The trade component's four subcomponents and their weights in the overall trade component are as follows:

- Lower income weighted Tariffs (40%);
- Agricultural Subsidies (10%)
- Services Trade Restrictions (25%)
- Logistics Performance (25%)

## Why is trade important for development, and for all of us?

International trade and trading relationships are changing very rapidly. According to a 2015 UNCTAD report, international trade grew by USD 20 trillion from 1990 to 2014 (from $4 to $24 tr.). Rich countries' policies have a significant impact on the trading prospects of developing countries. Trade provides important opportunities for countries to attract investment, create jobs, and reduce poverty. One study, for instance, suggests that the African Growth and Opportunity Act, the US trade agreement with Sub-Saharan African countries, has reduced infant mortality by about 9 percent. Rich-countries opening themselves to trade with developing country partners is critical for such development prospects. But despite a wide consensus on the positive effects of trade, many goods which poor countries are relatively better at producing—including agricultural goods—still face trade barriers in rich countries.

Rich countries also affect the development prospects of trading partners beyond their borders when they subsidize domestic agricultural production. This lowers production costs for rich-country farmers, which causes overproduction and the 'dumping' of the excess supply onto world markets. This in turn lowers the global prices of agricultural produce and thus hurts poor-country farmers. Also, trade in services is becoming increasingly important for development, but regulatory barriers remain.

Besides these direct measures, there are also high administrative or logistical costs to trading with many countries, which has the effect of disadvantaging especially poorer trading partners.

For more information on rich countries' trade policies, please consult CGD's paper.

Related CGD work: Trade.

## Lower income weighted tariffs

This indicator assesses ad valorem equivalent of duties on imports from all trading partners. A high score on this indicator indicates low tariffs or that tariffs are lower against poorer

countries. Firstly, we calculate the tariffs each country levies against all other countries. We then weight each of these tariffs by the GDP per head of the country it is levied against.

For tariff data, we use global trade analysis project data from ITC's [Market Access Map (MAcMAp)](#) and calculate the tariffs that one country is levies against another as being the simple average of all of the former's tariffs recorded against the latter.

The weighting system scales each country's GDP for a particular year to between 0 and 1 relative to the minimum and maximum GDPs of all countries for that year. The exact formula is:

$$1 + \left( \frac{\ln(GDP) - \ln(\min GDP)}{\ln(\max GDP) - \ln(\min GDP)} \right) \cdot -1$$

For GDP data we use the [current dollar GDP per capita](#) indicator from the World Bank's [World Development Indicators](#).

In this way, tariffs against the richest country are given a weight approaching zero, while those against the poorest country approach one. The effect of using the log of GSP per capita is to give greater emphasis to tariffs against the poorest countries.

Agricultural subsidies

The indicator assesses the extent of agricultural subsidy. The raw score in this sub-component is a country's agricultural subsidy as a proportion of its total agricultural output. The data for subsidies given to EU countries come from the [European Commission](#) and for non-EU countries (and the EU as a whole) from the [OECD](#).

The level of agricultural subsidy is calculated without including subsidies arising from tariff or other market price support, which is captured by the tariff indicator to avoid double-counting. The remaining agricultural subsidies, see below, are then divided by agricultural output in the country, to calculate a subsidy 'rate'. This is used as the CDI's agricultural subsidy measure.

Subsidies for the EU and non-EU CDI countries must be calculated slightly differently as EU members are united under a Common Agricultural Policy (CAP) and the OECD data treat the EU as a unit. This aggregation has two disadvantages for the CDI. First, it fails to reflect differences among EU members in how much they subsidize agriculture (which the results show are significant). Second, it includes countries that are not (yet) in the CDI. The solution is to calculate non-EU countries and the EU block normally, and to calculate EU countries using the results derived for the EU block.

The tariff rates for non-EU countries and the EU block are calculated as being the dollar value of total trade distorting subsidies (export subsidies plus other trade distorting

subsidies) as a proportion of total farm gate production. The complete list of assessed subsidies is:

- Export subsidies
    a) Market price support;
    b) Transfers to producers from consumers
- Other trade distorting subsidies
    c) Payments based on output;
    d) Payments based on input use;
    e) Payments based on current production;
    f) Payments based on non-current production, production required;
    g) Payments based on non-current production, production not required;

The less intuitive of these are e, f, and g, which are:

- e = Transfers from taxpayers to agricultural producers arising from policy measures based on current area, animal numbers, receipts or income, with current production of any commodity required
- f = Transfers from taxpayers to agricultural producers arising from policy measures based on **non-current** (i.e. historical or fixed) area, animal numbers, receipts or income, with current production of any commodity required
- g = Transfers from taxpayers to agricultural producers arising from policy measures based on **non-current** (i.e. historical or fixed) area, animal numbers, receipts or income, with current production of any commodity not required but optional
- (See OECD's explanations)

EU countries' subsidies are calculated individually utilising the production and subsidy rate for the EU. This is done by:

- Obtaining data on each member's receipts from the main subsidy fund under the CAP, the European Agricultural Guarantee Fund (EAGF).
- Each country is then assigned a share of EU trade distorting subsidies equivalent to its share of total EU payments under the EAGF.
- These dollar amounts are taken as shares of each country's agricultural value added to estimate member-specific subsidy rates.

## Services trade restrictions

The indicator assesses countries' level of restrictiveness for trade in services. It is based on the Services Trade Restrictiveness Index published by the OECD. The raw score on this subcomponent is the simple average of the scores given by the OECD for restrictiveness in all sectors. These are:

- Logistics cargo-handling;
- Logistics storage and warehouse;
- Logistics freight forwarding;
- Logistics customs brokerage;

- Accounting;
- Architecture;
- Engineering;
- Legal;
- Motion pictures;
- Broadcasting;
- Sound recording;
- Telecom;
- Air transport;
- Maritime transport;
- Road freight transport;
- Rail freight transport;
- Courier;
- Distribution;
- Commercial banking;
- Insurance;
- Computer;
- Construction

## Logistics Performance

The costs of moving goods across borders are assessed using two indicators from the World Bank's Logistics Performance Index (LPI), Customs and Infrastructure. These elements were chosen to match the discontinued measures of cost, time and documents required to import used in previous editions of the CDI. The new measures are based on surveys of importers administered by the World Bank who score "The efficiency of customs and border clearance" and "The quality of trade and transport infrastructure" for the relevant country. These two indicators are weighted equally to give the country's raw logistics performance score.

## Further Reading

- Trade and Commitment to Development: Which is More Damaging to Development, Agricultural Subsidies or Trade Tariffs?
- Europe Beyond Aid: Assessing Europe's Commitment to International Trade
- Section on trade in the CDI methodology paper from 2013
- Trade spreadsheet

# Security Component

The security component is composed of three subcomponents which assess countries' policy effort in facilitating peacekeeping and world security. These subcomponents and their weights in the security component are: contributions to peacekeeping and international sea lanes protection (55%); exporting arms to poor, undemocratic, and militarized countries (15%); and participation in international security regimes (30%).

## Why is security important for development?

Security and development are closely interlinked. War and political violence devastate government infrastructure and public resources and harm civilians and their homes and livelihoods. War decimates public capacities and political institutions and devastates citizens' lives. This causal link also works in reverse: poverty and institutional weakness make it easier for both challengers and incumbents to gain support for political violence and war. Conflicts also do not respect borders and it is therefore in the interest of all countries to support peace and international security beyond their borders.

## Contributions to peacekeeping

The subcomponent includes two indicators: countries' contributions to peacekeeping & humanitarian interventions and their contributions to protecting sea lanes. A country's score on this subcomponent is simply the sum of its score on these two indicators and has a 55 percent weight in the component.

### Peacekeeping & humanitarian interventions

This indicator measures countries' contributions to peacekeeping. It includes financial contributions to the UN peacekeeping budget and both direct and indirect personnel contributions to UN operations' and non-UN but internationally approved operations, weighted by GDP. Direct personnel contributions are measured by the average monthly contributions of personnel to UN PKO. Indirect personnel contributions are weighted by the number of active military forces and annual defense expenditures of each country.

Data come from UN Department of Peacekeeping Operations, International Institute for Strategic Studies , the Stockholm Peace Research Institute (SIPRI) and the IMF World Economic Outlook .

### Sea lanes protection

The indicator assesses countries contribution to the protection of sea lanes based on the quantity of major ships in the navy, the naval budget and ships devoted to sea lanes protection. The data on naval budgets and maritime deployments is collected by Mark Stoker, an independent defence economist, using sources such as the United Nations and individual Ministries of Defence. The indicator is expressed as share of GDP. Note that landlocked countries are recorded as having a zero contribution to sea lanes protection.

## Arms exports / GDP

The rationale for the arms exports indicator is that countries also affect peace and security beyond their borders if they supply arms to other countries. This might be especially detrimental for development if the government of the recipient country does not govern according to democratic principles, if the country is heavily militarized, or if the country suffers poverty. This subcomponent therefore weights arms exports by the recipient country's level of democracy), by its military expenditure as a proportion of GDP, and by its level of poverty. This is perhaps the most complex calculation in the CDI, so the formula will be presented and broken down into its parts. The final score on this sub-component is calculated as:

$$Arms\ Exports\ Score = \sum_{i=1}^{n} DWAE_i$$

Where $DWAE_i$ is the discounted weighted arms exports for year i. (i-n are the years 1995 – latest data year) The discounting approach is discussed shortly. The weighted arms export for year i is:

$$WAE_i = \sum_{j=1}^{n} (\$\ Arms\ Exports_j \cdot Arms\ Weighting_j)$$

For all recipient countries, j-n.

The first expression in the parenthesis is the dollar value of arms exports to country j. Data on arms exports is collected by Mark Stoker, an independent economist, using publicly available data from multiple sources including individual governments and bodies such as the EU. Countries are rewarded for making such data publicly available.

The second expression is country j's arms export weighting, which is:

 Arms Export Weighting of recipient country = (VA-2) x Military Expenditure x GDP weight

The first weight is on how democratic the recipient is, according to the subcomponent of the Kaufmann-Kraay index on "voice and accountability" (VA measured by the Voice and accountability dimension of governance by the [World Governance Indicators](#)). The weight is simply VA–2. Since VA scores range largely between +2 and –2, subtracting 2 creates a negative weight that puts the greatest emphasis on countries with the lowest VA scores.

The second weight is the recipient country's military expenditure as a percentage of its GDP (measured by [Stockholm International Peace Research Institute (SIPRI)](#)).

The last weight is based on the recipient's GDP per capita (as measured by the World Bank's [World Development Indicators](#)). This is converted to a range between 0 and 1 based on the logarithm the country's GDP relative to those of the richest and poorest countries' GDPs. The formula is:

$$1 + \left( \frac{\ln(GDP) - \ln(\min GDP)}{\ln(\max GDP) - \ln(\min GDP)} \right) \cdot -1$$

As stated above, a country's final score on this subcomponent is the sum of the discounted annual scores. This is because arms exports, like armed interventions, are volatile in quantity from year to year, so multi-year discounted averages are taken to give the final arms exports score. The discount approach weights the result more heavily to recent exports. We use a discount rate of 13 percent per annum, so that exports five years ago matter half as much as today's.

Finally, if a country fails to make its detailed arms export data publicly available, its final arms score is calculated as being that of the worst performing country plus one standard deviation. This approach penalises those countries that are not transparent. This indicator is standardised negatively.

## Participation in security regimes

The indicator assesses the level of countries' participation in nine important international security regimes. Countries receive one point for ratifying each of the following nine treaties. No points are awarded if the country signed but did not ratify the agreement. Countries also get a reduced score for not ratifying all additional protocols of the Convention on Certain Conventional Weapons. A country's raw score on this subcomponent is simply the sum of its score across all of the conventions, which can therefore have a maximum score of nine.

Follow the links to access the list of signatories for each treaty.

- Treaty on the Non-proliferation of Nuclear Weapons
- Comprehensive Nuclear Test Ban Treaty
- Chemical Weapons Convention
- The Biological and Toxin Weapons Convention
- Mine Ban Treaty
- Convention on Certain Conventional Weapons
- Convention on Cluster Munitions
- Rome Statute of the International Criminal Court
- Arms Trade Treaty

## Further Reading

- Note on the security component of the 2004 CDI
- Europe Beyond Aid: Europe's Commitment to International Security
- Section on security in the CDI methodology paper from 2013
- Security spreadsheet

# Migration component

The migration component is composed of six subcomponents which assess countries' efforts supporting migration. These subcomponents and their weights in the migration component are: participation in international migration conventions (10%); migration integration policies (25%); receptiveness to asylum-seekers (10%), share of refugees (10%); numbers of foreign students (15%); and openness to migrants (30%).

## Why is migration important for development?

International mobility of workers is potentially the most powerful tool for poverty reduction and income redistribution. Migration policies of rich countries therefore greatly affect citizens of poor countries. When workers migrate from poor to rich countries they broaden their opportunities to earn higher incomes, access knowledge and gain valuable skills. Expatriate workers collectively send billions of dollars back to their countries each year, a flow of remittances that surpasses foreign aid several-fold. Emigrants returning to their home countries, especially students, bring their new knowledge and skills and often capital which they can employ by opening businesses, and enhance the knowledge base of the country. In contrast to the 'brain drain' argument, there is very little evidence that skilled migration hurts the sending countries. On the contrary, migrants can strengthen and build trade networks, transfer technologies, and provide investment resources for their home economies.

Related CGD work: Migration, Displacement, and Humanitarian Policy

## International conventions

This indicator assesses the extent to which countries have ratified international conventions aiming to protect migrants. Three conventions are considered:

1949 Convention Concerning Migration for Employment (No. 97)

1975 Convention Concerning Migrations in Abusive Conditions and the Promotion of Equality of Opportunity and Treatment of Migrant Workers (No. 143)

2000 Protocol to Prevent, Suppress and Punish Trafficking in Persons, Especially Women and Children

Countries receive 10 points for ratifying each treaty, 5 points if the convention was ratified but with excluded provisions, and 0 points if the treaty was not ratified. A country's score on this subcomponent is the sum of its points across the three treaties.

## Integration policies

The subcomponent uses the data from the Migrant Integration Policy Index (MIPEX) which assesses how effective host country policies are helping to integrate migrants. MIPEX consists of eight categories, which together assess 167 policy indicators. MIPEX is the only

comprehensive assessment tool for the integration of migrants in rich countries. The eight dimensions of MIPEX are the following:

1. Labour market mobility
2. Education
3. Health
4. Political participation
5. Family reunion
6. Antidiscrimination
7. Access to nationality
8. Permanent residence

## Share of asylum seekers

This subcomponent is comprised of two indicators, the number of applications and the number of positive decisions on these applications. A country's score on this sub-component is the average of its score on these two indicators.

### Applications / population

This indicator measures the total number of asylum-seekers as a share of the population of the recipient country for the latest available year. Only new or first time applications are included, applications handed in to an appeal body are not counted. The data come from UNHCR global trend reports.

An asylum seeker is someone who has applied for asylum and is waiting for a decision as to whether they will be given refugee status. The 1951 Refugee Convention defines a refugee as "someone who, owing to a well-founded fear of being persecuted for reasons of race, religion, nationality, membership of a particular social group or political opinion, is outside the country of his nationality and is unable or, owing to such fear, is unwilling to avail himself of the protection of that country; or who, not having a nationality and being outside the country of his former habitual residence as a result of such events, is unable or, owing to such fear, is unwilling to return to it."

### Positive decisions / total decisions

This indicator measures the acceptance rate of people seeking asylum by measuring the number of positive decisions on asylum applications out of the total number of decisions made for the latest available year. Positive decisions combine both decisions as recognized under the Convention and others as well as first instance and appeal decisions. Total decision are all decisions taken within a year minus the 'otherwise closed' cases which include withdrawn applications, if an application has been considered as inadmissible to the procedure etc. The data come from UNHCR global trend reports.

An asylum seeker is someone who has applied for asylum and is waiting for a decision as to whether or not they are a refugee, as defined above.

## Share of refugees

A country's score on the Share of Refugees sub-component is the average of its scores on the three components refugees relative to GDP, refugees relative to population and refugees relative to land area.

For the following three indicators, refugee data come from UNHCR global trend reports.

### Refugees / GDP per capita PPP

This indicator reflects the ratio of total refugees (as defined above) and people in refugee-like situations to the recipient country's GDP. The GDP data come from the World Bank's World Development Indicators.

### Refugees / capita

This indicator reflects the ratio of total refugees refugees (as defined above) and people in refugee-like situations to the recipient country's population. The population data come from the World Bank's World Development Indicators.

### Refugees / land area

This indicator reflects the ratio of total refugees refugees (as defined above) and people in refugee-like situations to the recipient country's land area. The land area data come from the World Bank's World Development Indicators.

## Foreign students

A country's score on this subcomponent is the average of its score on two indicators: students from ODA countries as a proportion of total tertiary students and students from ODA receiving countries as a proportion of all international students. Data come from the OECD Education and Skills database and the DAC list of ODA recipient countries.

### Students from ODA-receiving countries / total tertiary students

The indicator evaluates the number of students from countries eligible for ODA as a share of total tertiary students.

### Students from ODA-receiving countries / total international students

The indicator evaluates the number of students from countries eligible for ODA as a share of total *international* tertiary students.

## Migrant inflow

The indicator looks at inflow of total migrants to CDI countries and is weighted by the income of the migrants' countries of origin, i.e. migrants' host countries are rewarded more

for accepting migrants from poor countries rather than relatively rich countries (measured by GDP/capita).

The weighting system scales each origin country's GDP for a particular year to between 0 and 1 relative to the minimum and maximum GDPs of all countries for that year using a logarithmic weighting. The exact formula is:

$$1 + \left( \frac{\ln(GDP) - \ln(\min GDP)}{\ln(\max GDP) - \ln(\min GDP)} \right) \cdot -1$$

The number of migrants from each country is multiplied by the origin country's weight using this methodology to give an income weighted migrant inflow number.

Migrant data come from the OECD International migration database and Population and GDP per capita data come from the World Bank's World Development Indicators. The detailed calculations can be found in the poverty weighting calculation sheet here.

If we could not find data for a given year, we used the most recent year up to a point and depending on the measure. For instance, when poverty weighting migrant inflows to developed countries, Syria's GDP was unavailable for recent years. In this case we used the most recently available GDP data. Generally, when estimating or relying on different data sources we usually tried to follow a conservative approach. Consider again the Syria's GDP data: the actual GDP currently is likely to be much lower than that of previous. That means that CDI countries that took up Syrians in recent years, their score likely underestimates the true value of their contributions

## Further Reading

- Realizing the Potential of Migrant "Earn, Learn, and Return" Strategies: Does Policy Matter?
- An evaluation of an extended index on pro-development migration
- Europe Beyond Aid: Assessing European Commitment to Migration
- Section on migration in the CDI methodology paper from 2013
- Migration spreadsheet

# Appendix 1: Component Formulas

## Aid

Aid = 0.5(Aid quantity) + 0.5(Aid Quality)

    a) Quantity = ODA / GNI
    b) Quality = (Bilateral Score * % spent bilaterally) + (multilateral score * % spent multilaterally)
        I. Quality score = $\frac{1}{n}\sum_{i=1}^{n} AQI_i$
          a. Where:
          b. $AQI_i$ = Aid Quality Indicator I (i to n are the aid quality indicators of which there are 22 (multilateral) or 24 (bilateral)).

## Finance

Finance = 0.5(investment) + 0.5(Financial Secrecy)
    a) Investment = 0.4(Commitments) + 0.4(IIAs) + 0.2(OOF)
        I. Commitments = sum of scores 4 areas
        II. IIAs = % of Maximum Score
        III. OOF = OOF / GNI
    b) Financial Secrecy = Average of scores on 8 indicators:

## Technology

Technology = 2/3(Government support) + 1/3(IPR)

    a) Government Support = Expenditure across all areas + Tax Incentives
        I. Expenditure = PPP(Budget outlay across 13 areas + 0.5 outlay on defense / GDP)
        II. Tax Incentives = 0.75(business Expenditure on R&D * Tax Subsidy Rate)
    b) Intellectual Property Rights = 0.2 (Patents) + 0.5(TRIPS+ etc) + 0.3(Rights Loss)

## Environment

Environment = 0.05(I)+0.1(II)+0.15(III)+0.15(IV)+0.1(V)+0.05(VI)+0.05(VII)+0.05(VIII)+0.15(IX)+0.15(X)

Where:

    Global Climate
    I. Fossil fuel production (5%);
    II. Greenhouse Gas emissions (10%);
    III. 10-year Change in Greenhouse Gas emissions (15%);
    IV. Gasoline taxes (15%);
    V. Consumption of selected Ozone-Depleting Substances (10%);
    VI. Paris Agreement ratification (5%);

Sustainable Fisheries

VII.    Fishing subsidies (5%);
VIII.   Ratification of Fish Stocks Agreement (5%);
        Biodiversity and global ecosystems
 IX.    Biodiversity treaties participation (15%);
  X.    Tropical wood imports (15%);

## Trade

Trade = 0.4(Tariff) + 0.1(AgSubs) + 0.25(STR) + 0.25(logistics)

a)  Tariff = $\frac{1}{n}\sum_{i=1}^{n} WT_i$
    Where:
  I.    WTi = income weighted tariff for trading partner country i (i-n = all trading partners)
 II.    Income weight = logarithmic conversion of GDP to 0 (richest) and 1 (poorest)
b)  AgSubs = (Implied or direct) Subsidy / Agricultural output
c)  Services Trade Restrictions (STR) = Average STRI score across 22 sectors
d)  Logistics = 0.5(Customs Indicator) + 0.5(Logistics Indicator)

## Security

Security = 0.55(Military Spending) + 0.15(Arms Exports) + 0.3(Security Regimes)

a)  Military Spending = Peacekeeping + Sea Lanes Protection
  I.    Peacekeeping = UN Personnel Contributions + UN Financial Contributions + Non-UN
    i.    UN Personnel Contributions = Direct Cost + Indirect Cost
   ii.    UN Financial Contributions = Financial Contributions / GNI
  iii.    Non-UN & Humanitarian = Direct cost of personnel + Indirect Cost of Personnel
 II.    Sea Lanes Protection = Cost of ships devoted to sea lane protection / GDP
b)  Arms Exports = $\frac{1}{n}\sum_{i=1}^{n} DWAE_i$
    Where:
I.  DWAEi = Discounted Weighted Arms Export to recipient country I (i-n = all countries arms are exported to)
    i.    Discount Factor = 1/ (1.13)$^t$ (where t = time periods before current year)
   ii.    Weight = (VA-2) x Military Expenditure x GDP weight
        a.  VA = Voice and accountability score
        b.  Military Expenditure = Military expenditure / GDP
        c.  GDP weight = logarithmic conversion of GDP to between 0 (richest) and 1 (poorest)
c)  Security Regimes

## Migration

Migration =

0.1(conventions) + 0.25(Integration) + 0.1(Asylum) + 0.1(refugees) + 0.15(students) + 0.3(migrants)

Where:

a) International Conventions = sum of scores across 3 conventions
b) Integration policies = MIPEX score across 8 areas
c) Share of Asylum seekers = 0.5(asylum seekers) + 0.5(positive decisions)
   I. Asylum Seekers = applications / population
   II. Positive Decisions = Positive Decisions / Applications
d) Refugees = Average of *standardised* scores in:
   I. Refugees / Population
   II. Refugees / Land Area
   III. Refugees / GDP
e) Students
   I. Students from ODA Receiving Countries / Total Tertiary Students
   II. Students from ODA Receiving Countries / Total International Students
f) Inflow Migrants = $\frac{1}{n}\sum_{i=1}^{n} WM_i$
   Where:
   I. $WM_i$ = Weighted numbers of migrants from country I (i-n = all countries from which migrants are hosted)
      i. Weights = logarithmic conversion of GDP of country i between 0 (richest) and 1 (poorest)