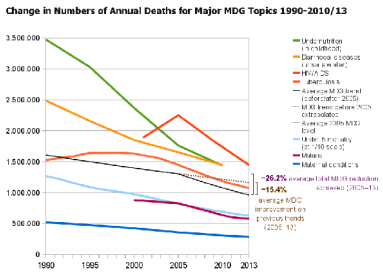
Data-derived Recommendations for Post-2015 Targets

Proposal to the UN Negotiations on the Post-2015 Development Agenda, with Regard to the Final Report by the UN Open Working Group on Sustainable Development Goals as well as to the 2014/2015 Updates of the Global Burden of Disease Study and the WHO Global Health Estimates



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This proposal provides data and specific suggestions for the following subjects and purposes:

1. assessing the trend changes related to the Millennium Development Goals (MDGs)
2. deriving an according and reflective level of ambition for the subsequent Sustainable Development Goals (SDGs) from the MDGs' trend changes; pragmatically, the underpinning idea is that the SDGs should be at least as aspirational as the MDGs have been
3. establishing the according degree of aspiration that is transposable at the global level as well as at the national level, thereby allowing for consideration of national circumstances without changing or compromising global targets
4. presenting priority global challenges, identified by data on mortality by age groups and eco-

nomic losses; this data may assist in identifying focal points for target-setting. Although the current set of proposed targets reflects the largest global issues better than the MDGs have done, there still exist several among them that do not have a quantifiable target. The aforementioned levels of ambition could be applied to all SDG targets, including these major global challenges.

5. suggesting to frame or cluster the 17 SDGs in a small number of summary objectives for the purpose of effective communication.

The proposal uses data from the *Global Burden of Disease study (GBD),* which was updated in December 2014 and January 2015 (GBD).[1] It covers 240 causes of death, in collaboration with scientific institutes and the WHO.[2] The latest available data from UN organizations and scientific publications has also been considered and, where appropriate, has been utilized. It includes the *WHO Global Health Estimates* of 2014, covering 163 diseases and injuries (WHO).[3]

Global2015 conducts research and produces wide-reaching reports related to topics of substantial global importance that have the potential to be improved. In this document we have updated a proposal to the UN OWG, which entails a pre-release excerpt of an upcoming full review related to the setting of targets for the post-2015 development agenda. All recommendations are drawn from statistical data and trend analyses, two of which have already been reflected in the final report by the UN OWG. Providing decision-makers with unbiased information on the most important global challenges is a key aim of Global2015.

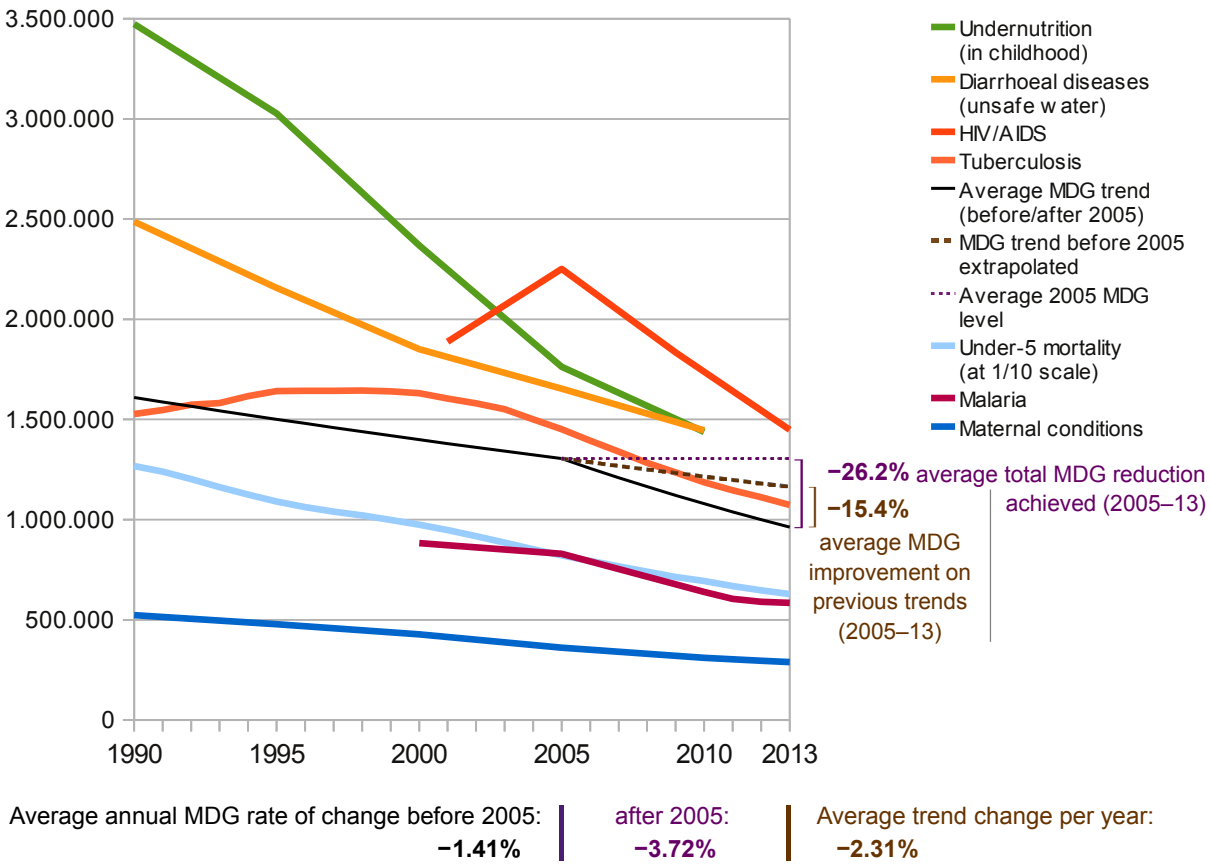
The motivation for this paper originates from the global targets, that have been proposed by the United Nations' Open Working Group on Sustainable Development Goals (OWG).[4] These targets for 2030 were developed in order to generate successors to the Millennium Development Goals, which are due to meet their goals by the end of 2015. The UN General Assembly adopted the outcome by the UN OWG as the main basis for integrating the SDGs into the future development agenda, but stated that other inputs will also be considered during the intergovernmental negotiation process.[5]

1 Trend Achievements of Major MDG Targets

The MDG targets have had successes: Since 2005, all MDG topics have made progress towards their target, with some meeting their target ahead of the end-2015 deadline. This section focusses on trend improvements in order to assess the impact of the introduction of the MDGs in 2000 as well as the level of aspiration of the MDGs. The degree of ambition should be seen in the context of previous trends. Considering the then increasing trend of HIV/AIDS and the then decreasing trend of poverty, the MDG targets aimed for a 50% reduction in extreme poverty but only for stabilization for HIV/AIDS.

The trend assessment is based on the number of deaths, since this indicator refers to the most severe impact on humankind and is used in the SDG targets for similar topics. All outcome-related MDG targets are included that can be directly related to mortality (except for extreme poverty, for which no mortality trend data is available). Trends are shown in the diagram below.

Change in Numbers of Annual Deaths for Major MDG Topics 1990–2010/13



Data sources: WHO 2014c–f; IHME [GBD study] 2013; UNICEF 2014.[6] Diagram: © Global2015.

After the MDGs were introduced in 2000, substantial changes of mortality trends were only to be observed a few years later. Implementation did not begin immediately on a full scale and there was a time lag before the impacts of these could be seen. There was a notable difference before and after 2005; on average improvements were at approximately 1.41% per year before 2005 and increased to a rate of 3.72% after 2005 (depicted by the black line in the diagram above).[7] This difference in rate of 2.31% per year demonstrates the degree to which trends have improved on previous trends. This data suggests that targets are important in creating results. Of particular note is the time frame 2005–2013, where due to the trend change a reduction in the 2005 number of deaths by 15.4% was averaged in addition to the previous trend (percentage points).

The largest change in trends has been achieved for HIV/AIDS, where the number of deaths increased by approximately 4.50% annually between 2001 and 2005, but was then successfully reduced by 5.37% per year up until 2013 (derived from WHO data).[8] Tuberculosis deaths declined by only 0.775% annually from 2000 to 2005, but then the rate of decline increased to 3.71% afterwards, resulting in a trend improvement by 2.93% per year (WHO).[9] Malaria mortality after 2005 has improved on previous trends by about 3.09% annually (WHO).[10] Reductions in under-five and maternal mortality accelerated slightly, while undernutrition and diarrhoeal diseases (largely related to unsafe water and sanitation)

showed a slight slowdown in their pace of progress after 2005 (UNICEF, WHO, GBD).[11] This trend data constitutes the above-mentioned average MDG trend of a 3.72% annual reduction after 2005, an improvement on the previous trend by 2.31% of the number of deaths per year (percentage points).[12] However, it must be acknowledged that the substantial trend improvements could be entirely or partially due to causes not directly related to the MDGs. Similarly, the lack of trend improvement in undernutrition and diarrhoeal diseases does not necessarily insinuate that the MDGs had no impact on them; indeed, the trend could have worsened without the MDGs.

Trends and Percentage Change Rates

The trend changes are expressed in percentage change rates, annual or over fixed time frames. The percentage change rates refer not to linear but to exponential change and can therefore be compared directly between different periods of time. They are similar to the average annual rates of reduction (AARR) provided by UNICEF for trends of mortality rates.[13]

2 Deriving the Average Level of Ambition for the SDGs from the MDGs

Several targets proposed by the UN OWG make the suggestion to "substantially reduce" certain problems by 2030, such as mortality from air pollution (OWG).[14] For some of these topics, current trends are already decreasing substantively, such as the number of deaths related to water pollution.[15] By contrast, targets should have the aspiration to clearly surpass ongoing trends, without overextending by demanding strong reductions of currently increasing trends. Applying a certain target level to issues with an increasing trend will require a different level of effort than to those with a decreasing trend; an increasing trend requires a higher level of ambition, whereas a decreasing trend is likely to meet a target with far less difficulty. Therefore, the relative improvement or change of trend should be used as the measurement for ambition (Fukuda-Parr et al. [IPC/UNDP]).[16]

An approach that can help to strike a balance between a lack or excess of ambition could be one that refers to what has actually been accomplished: In their aims the SDG targets should be at least as ambitious as the achievements so far attained by the MDGs. The aims achieved by the MDG targets could therefore be used to calculate this minimum. The key to the achievements in the ambition of the MDGs lies in the aggregated changes of the trends. As previously mentioned, since 2005 the mortality-related MDGs improved on previous trends by an average of 15.4% of the 2005 mortality, and together with the previous trends the mortality reduction reached approximately 26.2% by 2013.[17] The choice of figure depends on the type of target:

- On the *MDG topics in general,* the pace of progress should continue in the SDGs in order to ensure that the level of ambition is maintained and to ensure that success in fulfilling the targets remains as likely and as realistic as has been with the MDGs. Hence, the current average mortality reduction of 26.2% should uphold. It represents an annual decrease by 3.72%. Since the trend change related to the MDGs had already occurred, this 3.72% rate constitutes the trend at the beginning of the SDGs, which should be maintained. The pre-2005 trends do not need to be considered separately. Overall, for the SDG period from 2015 to 2030, the annual percentage reduction of 3.72% would lead to *a total reduction of 43.4%,* maintaining current

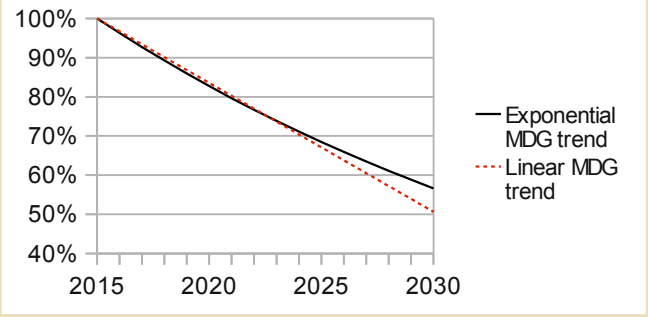
trends.[18] If 2010 is chosen as the base year, this would equal 53.2% (including reductions achieved between 2010 and 2015).[19]

- On *MDG topics with unfinished business,* the latest average MDG trend should also guide the aspiration to reach the same mortality reduction between 2015 and 2030 as with the other MDG topics: approximately *43.4%.* Not referring to the topic-specific latest trend helps to achieve convergence among the MDG topics and to address unachieved targets. Using the *average* MDG trend as a *minimum* target level means aiming for accelerating progress of underperforming MDGs. This aligns with the call by the UN Rio+20 conference to meet incomplete MDG targets (UN).[20]
- For the *new topics,* however, their current trends should be taken into account separately. In contrast to the MDG topics, new challenges may have very different current mortality trends, including some increasing ones. The trend change is still yet to be observed. A unified level of aspiration should improve on the different starting trends as it occurred with the MDGs when they began. Otherwise, one would run the risk of establishing new targets that either have no ambition or are overly ambitious, with regard to current trends. Therefore, the average achievement resulting from the trend change by the MDGs should be applied. This has been an averaged 15.4% of the absolute starting level over 8 years (2005–13) and would be 24.2% over 15 years (2015–30, exponential change) across all topics.[21] Thus, in order to achieve the same as the MDGs have achieved, the new SDG topics should aim for at least *a 24.2% total improvement on current trends* (or by almost one quarter[22]) from the absolute 2015 level to 2030 (percentage points).[23] These total reductions would add to ongoing topic-specific reductions, or reverse ongoing increases. This unified level of aspiration can be used for each new SDG topic
  - to set a target in relative terms: to improve on current trends by 24.2% of the 2015 level (percentage points) – or one quarter of the 2015 level – by 2030
  - or to derive an absolute target, taking into account the latest trends (for example, if the current trend of the topic would lead to a 10% reduction by 2030, the target should strive to reduce the absolute 2015 level by 34.2%, or by one third).

This approach distinguishes between renewed MDG targets and new targets for non-MDG topics in order to ensure an even level of aspiration for both. For the MDG targets, their previous trends have already been incorporated into their latest trends, which for the new SDG topics will occur only after 2015.

More Modest: Total Percentage Reductions as Exponential Decreases

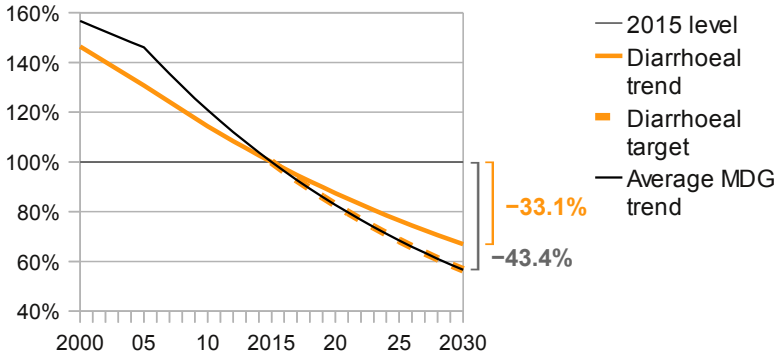
The total reductions mentioned here reflect exponential decreases; assuming a linear decrease would lead to much stronger reductions.[24] Basing the long-term reduction on annual percentage reductions considers the general issue that after having reached a lower level, the same absolute reduction becomes more difficult to attain (Fukuda-Parr et al. [IPC/UNDP]).[25] Total reductions based on annual rates of change may not be as easy to verify for the reader, but they are more moderate and realistic.



Three examples for different kinds of targets:

- Deaths related to the *MDG topic of unsafe water and diarrhoeal diseases* decreased by approximately 12.5% between 2005 and 2010 (IHME [GBD]).[26] Annually, the rate of reduction was 2.64%. The trend has not improved since the introduction of the MDGs (see diagram on p. 3). To continue with the average level of ambition of the MDGs, the annual percentage reduction should be raised to the MDG average of 3.72%. This can be achieved by a replacement in the proposed OWG target 3.9 with regard to water pollution; instead of stating the aim to be to "by 2030 substantially reduce" this could say, *reducing by 2030 by 43.4%* (or by two fifths), from 2015 onwards.[27] For comparison, the current trend would approximately lead to a 33.1% decrease by 2030 (see diagram to the right).[28] Therefore, it would also be possible to express the target as aiming to improve on the current trend by 10.3% (or one tenth) of the 2015 level, by 2030 (see section 3 for the advantage of this).

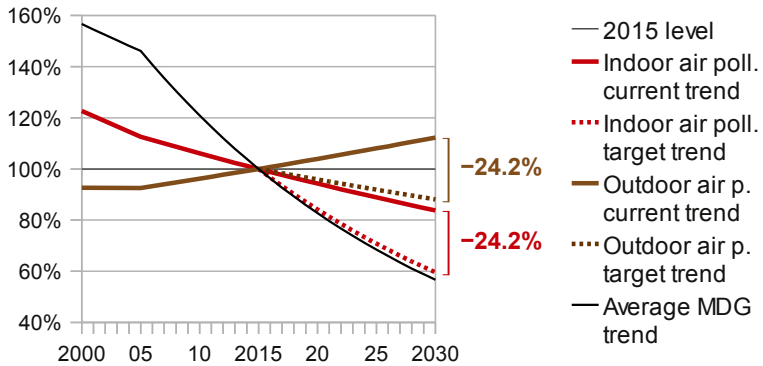
MDG Topics:
Continuing the Pace of Progress and Completing Unfinished Business (Example: Diarrhoea/Unsafe Water)



The current trend would only result in a 33.1% reduction in death, which falls below the 43.4% derived from the average MDG trend. Therefore, the target should strive for the average MDG reduction.

- Deaths due to the *new SDG topic of indoor air pollution decreased* between 2005 and 2010 by about 5.73% in total, or by 1.17% per year (IHME [GBD]).[29] If continued, this trend would result in a total reduction by 16.2% from 2015 to 2030.[30] In order to achieve a mortality trend change similar to that attained by the MDGs, target 3.9 should, by 2030, improve on the current trends by the 24.2% (percentage points) derived from the MDGs (or by one quarter of the starting level).[31] This amounts to a final aimed decrease of 40.4% (or two fifths) between 2015 and 2030.

New SDG Topics:
Considering Current Trends for Realistic Targets (Aspiring for a Trend Improvement Equal to the MDGs)



New SDG targets should strive for the same trend change as the MDGs achieved on average. Current trends, no matter whether increasing or decreasing, should be improved on by 24.2% of the 2015 level in order to show the same ambition for change.

- Deaths from the *new SDG topic of outdoor air pollution* actually *increased* by approximately 3.94% between 2005 and 2010 (0.775% annually) (IHME [GBD]).[32] In the post-2015 target period, this trend would lead to a further increase by 12.3%.[33] In this case it would make sense to reverse the increasing trend by improving on it by 24.2% of the starting level (derived from the MDG improvements), which is equivalent to an absolute 11.9% reduction between 2015 and 2030 (in contrast to the current increase).[34] Applying the average MDG improvement would transform the currently rising mortality trend into a decrease (target 3.9).

Both new SDG targets share the same aspiration to improve trends, despite the different figures of total percentage reductions. Furthermore, the level of ambition is the same as that which the MDG topics have achieved, and also the same as an average MDG topic would be aiming to uphold, and the same as the underperforming MDG topic in the example above is aiming to achieve.

Of course it could be beneficial to set more aspirational targets, particularly on key issues such as poverty and hunger, which tie into the success of other issues. Furthermore, topic-related circumstances can be taken into account, such as future trend projections, time-lags, or the possibility of eliminating an epidemic (see information provided in our previous proposal).[35] The approach presented should solely provide a foundation for applying an equal minimum level of ambition to different targets. The level is based on the original MDG achievements, and adds to the change already achieved.

This approach, as well as any setting of targets, requires defining a *base year,* which has not been proposed by the OWG. In order to continue from the MDGs, to create a "post-2015" agenda, and to avoid overlap of the target periods, this proposal recommends choosing 2015 as the base year.

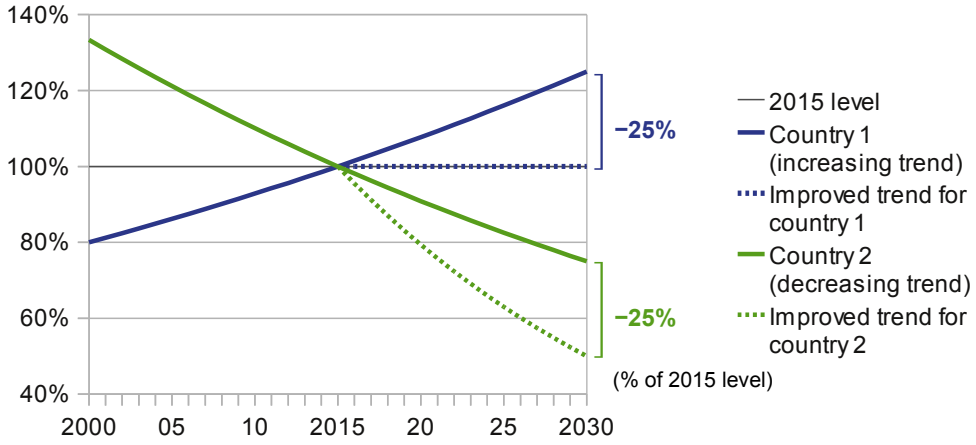
3 Setting Global Targets in Trend-related Terms in Order to Match National Conditions

The targets should be based on improving on the current trend by a certain percentage, derived from the average level of ambition achieved by the MDGs. Moreover, it was previously suggested to express targets relatively; in terms of distance to current trends. This has the further advantage that a global target would automatically consider different national circumstances; countries already progressing could extend their improvements, while countries with stagnating or worsening trends could aim for a trend reversal. In both cases the global target would suggest the same level of relative improvement in different countries and these improvements would, over the target period, approximately add up to the global target level (Azad).[36]

The trend change should, on average, be the same as that being achieved by the MDGs. Therefore, a 24.2% improvement on current mortality trends over the forthcoming 15 years would be reasonable and achievable for the new SDG topics.[37] The MDG topics would continue their latest trends if they meet or surpass the average MDG trend, or they would improve on their current trends to achieve the average MDG trend if they do not yet meet it. Countries that show a lower level of improvement, or even have worsening trends, should only improve on these trends by the relative global target level. Similarly, countries with trends better than the global trends should improve on their trends by the same relative global level as other countries do.

For example, let us suppose there would be a global target to improve on current trends in mortality from indoor air pollution by 25%. If a country's current trend shows an increase by 25%, this worsening should be offset by a global target level to improve on trends by 25% so that for this country the global target would act like a stabilization target. The country would not be required to achieve a reduction of absolute numbers by 25%. If, for the same global target, another country already shows a 25% reduction due to its better conditions, it would add another 25% (percentage points) to its trend to meet the global target by 2030. This second country would achieve a 50% reduction in absolute terms, driven by the same aspirational change as demonstrated by the first country. This only applies to new topics included in the SDGs, while topics originating from the MDGs only continue the average trend already achieved. The trend change suggested for new SDGs is exactly replicating the trend change that occurred in the MDGs. If a country had recently introduced a successful programme to reduce mortality it may refer to the trend before this programme has shown effect. This would be akin to replicating trend changes that had occurred before the MDGs were introduced; for example, AIDS mortality trends improved in some countries due to antiretrovirals already introduced before the MDGs were implemented. Thus if a trend change has been achieved by political action before a new SDG target is set, that would be taken into account and the trend before the change would be used as the baseline to compare achievements against. Pioneers would not be obliged to double their attainments.

A Global Target in Trend-related Terms Adapting to Different Countries



Countries improve on their increasing or decreasing trends by the same ambition for change, considering their different starting conditions and capabilities.

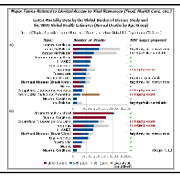
This approach is able to avoid a large portion of the problems that occur from applying a global target that is fixed in absolute terms to individual countries with different starting points, different trends, and different capabilities. Global targets in relative, trend-related terms fulfil the requirement agreed upon by the UN Rio+20 conference: they are truly "global in nature and universally applicable to all countries while taking into account different national realities, capacities and levels of development" (UN).[38] They provide much more flexibility without compromising the global target and the achievement at a global level. This also means there is no need to change target levels at the national level, which otherwise is the only option to obtain flexibility and to take national circumstances into account. Global targets in

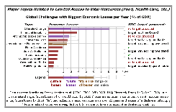
relative, trend-related terms are more powerful and more appropriate for very different countries in a world characterized by the global inequality that is the starting point and rationale of both the MDGs and the SDGs.

4 Major Topics for the Sustainable Development Goals

The UN Open Working Group proposed global targets for a number of topics in the post-2015 development agenda (OWG).[39] The following diagrams provide an overview of the topics that inflict the biggest impacts on humankind in terms of deaths and economic losses. The same topics can be found in other data showing the biggest impacts in terms of health losses (disability-adjusted life-years, DALYs) and affected natural resources. The diagrams only cover challenges that result from limited, or lack of, access to vital resources, such as clean water or medical treatment. Poverty, in a broad sense, goes beyond consumption levels (expressed in $ per day) and is interlinked with most, if not all, of the topics mentioned below.

See next pages





Available data displayed in the diagrams below gives good reason to keep the time-bound and quantifiable targets proposed by the UN OWG for the topics of neonatal and maternal conditions (targets 3.1 and 3.2), hunger, malnutrition and food waste (2.1, 2.2 and 12.3), HIV/AIDS, tuberculosis and malaria (3.3), road traffic accidents (3.6) and energy efficiency (7.3).[40] Further data supports the principal target 1.1 on extreme poverty (WHO).[41] These targets certainly belong to the category of targets which "remain robust and responsive to the goals", as expressed by UN Secretary-General Ban Ki-moon in his synthesis report on the post-2015 agenda (UN SG).[42] In contrast, for many other targets it is necessary "to ensure that each is framed in language that is specific, measurable, achievable" (UN SG).[43]

In some cases, "a proposed target is stated in measurable terms, but no quantitative target has been specified" (UN SG).[44] Such targets ***lack clarity in quantifying,*** which then often has the knock-on effect of leading to a lack of ambition. For example, target 3.9 aims to "substantially reduce" the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution "by 2030":[45]

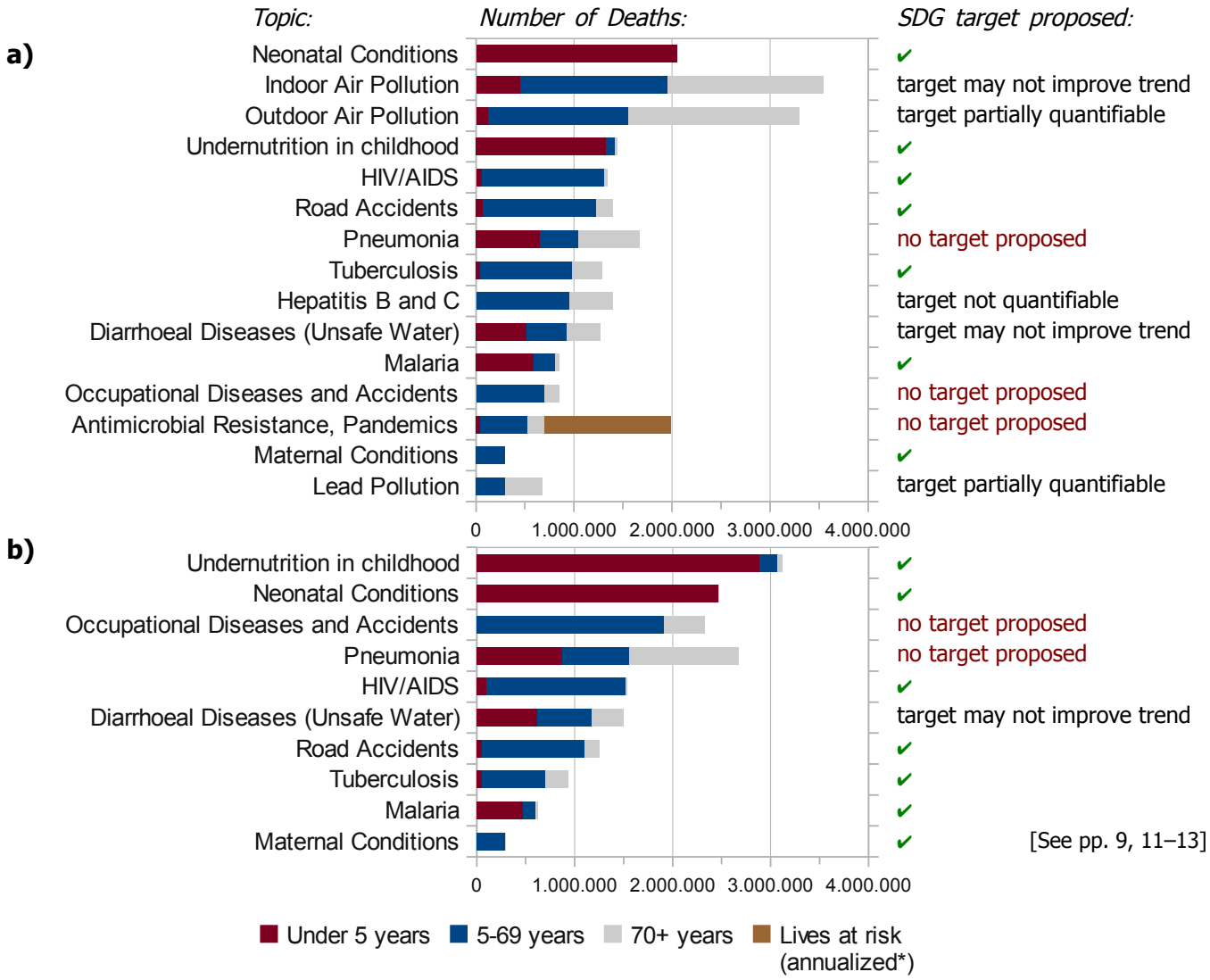
- For the currently increasing mortality trends of *outdoor air* and *lead pollution,*[46] the target implies at least a trend change towards stabilization.[47]
- However, the trend of *indoor air pollution* has already decreased by approximately 20.1% over 15 years (GBD)[48] and therefore aiming for a "substantial" reduction may not necessarily show or deliver the adequate degree of ambition needed to improve the trend.[49]
- Similarly, the trend on *diarrhoeal diseases,* largely related to drinking water pollution, has already decreased by 33.0% within 15 years (GBD).[50] Hence, the target may not trigger change.

Nevertheless, SDG targets are intended to be aspirational (OWG; UN).[51] Therefore this proposal is suggesting a method to establish an ambitious but achievable target level for diarrhoeal diseases, indoor air pollution and other topics, based on the MDG achievements (see p. 6 above).

Major Topics Related to Limited Access to Vital Resources (Food, Health Care, etc.)

Latest Mortality Data by the Global Burden of Disease Study and the WHO Global Health Estimates (Annual Deaths by Age Group)

Order of Topics According to the Number of Deaths at below Global Life Expectancy (70 Years)



[See pp. 9, 11–13]

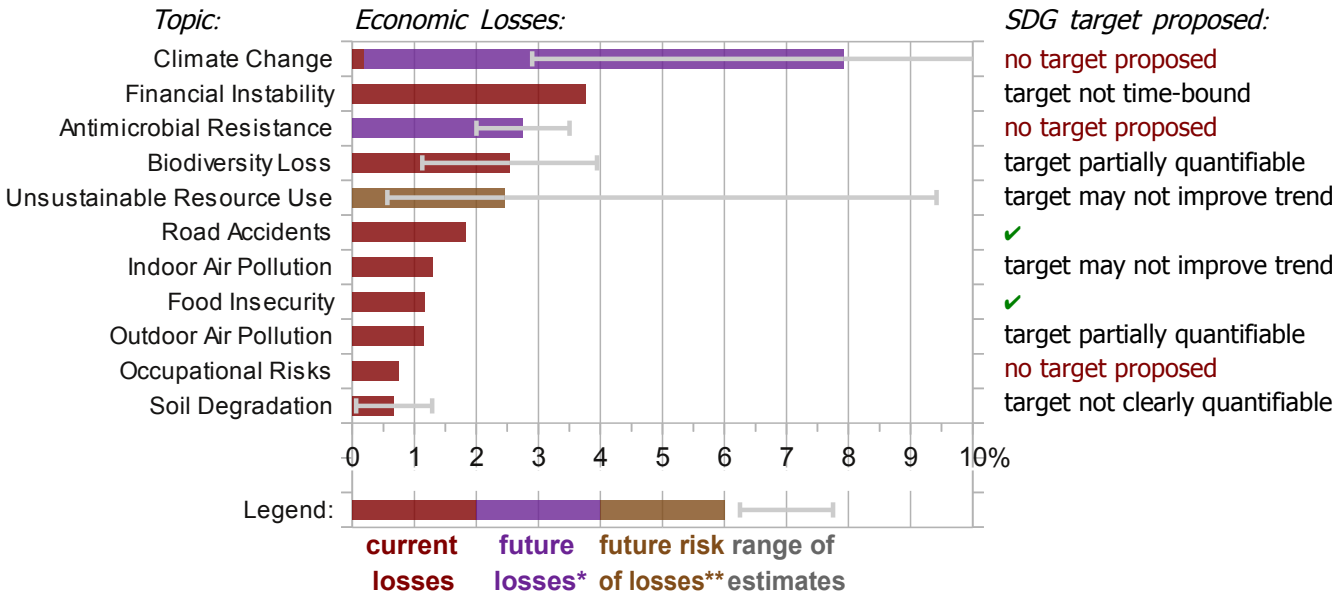
Data sources: **a)** Global Burden of Disease (GBD) study, Dec. 2014/Jan. 2015 (on deaths in 2013);[52] on indoor and outdoor air pollution, undernutrition in childhood, occupational diseases and accidents, lead pollution: GBD 2012a (on 2010);[53] on antimicrobial resistance: RAM [UK] 2014;[54] on pandemics: Murray et al.; McKibbin et al.; Taubenberger et al.; Osterholm.[55]
b) WHO Global Health Estimates 2014 (deaths in 2012);[56]
on undernutrition in childhood: Black et al. 2013 (deaths in 2011);[57] on occupational diseases and accidents: ILO 2014.[58]

* Lives at risk: estimated deaths from risk events (pandemics) divided by historic frequency of occurrence.[55]

The order of topics is driven by the level of impact in terms of death on people aged under 70 years, since the global life expectancy was 70 years in 2012 (WHO),[59] and mortality at younger ages is considered a better indicator here for the severity of an issue than total mortality. It makes a difference whether people die at child age, at middle age (which has low mortality rates), or at high age (with high mortality rates anyway). However, this does not imply that mortality at higher ages should not be taken seriously. Therefore, data on all age groups is provided.

Major Topics Related to Limited Access to Vital Resources (Food, Health Care, etc.)

Global Challenges with Biggest Economic Losses per Year (% of GDP)



Data sources: Nordhaus; Stern; Kemfert et al. [DIW]; IPCC; WB; RAM [UK]; Pimentel; Braat; IMF; WHO; FAO; i.a.[60]
On climate change, future losses which would occur by 2100 if business as usual is continued; on antimicrobial resistance, future losses by 2050 if left unchecked; on resources, scenarios over 20 years in the case of a decline in oil supply

* The bar segment represents future losses as an addition to the current losses (therefore the total amount of future losses is represented from a starting point of zero).

** Future risks of losses were weighted by 0.5 in order to take into account and reflect probability.

Some targets regarding *biodiversity* are also not clear, or are only partially quantifiable. Target 2.5 says: "By 2020 maintain genetic diversity of seeds, cultivated plants, farmed and domesticated animals and their related wild species". Since trends in biodiversity are worsening, this implies an aim for stabilization. Target 15.5 is open to different interpretations: "Take urgent and significant action to …, by 2020, protect and prevent the extinction of threatened species".

Target 7.2 to "increase substantially the share of *renewable energy* in the global energy mix by 2030" is unclear with regard to quantification and aspiration, since the share of renewables is already increasing. Depending on interpretation and the indicator chosen, it is similar to target 8.4: "Improve progressively through 2030 global *resource efficiency* … and endeavour to *decouple* economic growth from environmental degradation". Since resource efficiency is already improving (Krausmann et al.),[61] this target is likely to have little effect.

Regarding *soil degradation*, target 15.3 pledges to "by 2020, … strive to achieve a land-degradation neutral world". This requires clarification of the spatial scale of land-degradation neutrality, which is currently in the process of being defined (UNCCD).[62] It should be noted that most people affected by land degradation have few opportunities to move to flourishing areas.

No quantifiable elements at all are included in target 3.3 when affirming to "combat *hepatitis"* by 2030. It is appreciated that the UN OWG has included this in its final report, which perhaps may have been a move encouraged by the previous Global2015 proposal.[63] Nevertheless, a target level is still missing, despite hepatitis B and C claiming a death toll of 1.39 million in 2013, similar to the MDG topics of HIV/AIDS, tuberculosis or malaria.[64] Related mortality is still increasing (GBD) and could make hepatitis B and C, together, the biggest infectious killers if current trends continue.[65] Hepatitis is called a "viral time-bomb" (WHO) since, most often, decades can pass between infection and development of severe health outcomes.[66] This time-lag could be incorporated in a target on hepatitis B and C by applying the aforementioned average level of ambition solely to new infections, while aiming to only halt the increase in the number of deaths by 2030.

Some major SDG targets are not quantifiable because they are *not time-bound,* such as target 10.5: "Improve the regulation and monitoring of global *financial markets and institutions".*[67]

More seriously, ***no SDG targets whatsoever*** have been proposed for pneumonia, occupational diseases and accidents, antimicrobial resistance and pandemic preparedness, as well as for climate change:

- *Pneumonia* is the biggest infectious child-killer, claiming between 414 000 and 1.3 million lives of children under five per year (GBD; WHO; Liu et al.; Fischer Walker et al.).[68] It is also likely the biggest infectious killer in total, while for people under 70 years it may be surpassed only by AIDS (see diagrams on p. 10). Mortality trends have only decreased by 16.3% over 15 years (GBD).[69] If current trends continue, pneumonia would remain the biggest infectious killer (unless it is surpassed by hepatitis B and C).[70] Pneumonia deserves a quantified and time-bound SDG target at least as much as HIV/AIDS, tuberculosis or malaria do.[71] This could be included in target 3.3.
- The UN OWG proposed a target on child labour (8.7), but not on *occupational diseases and accidents,* which kill between 852 000 and 2.33 million people each year (GBD; WHO; TUT et al.; ILO).[72] The latest trend is constant or slightly increasing (ILO; GDB).[73] Creating a sustainable economy and decent jobs should include the aim to reduce workplace-related mortality.
- *Resistance of pathogens against antimicrobial drugs* is on the rise and claims a roughly estimated 700 000 lives per year (RAM [UK]).[74] This includes approximately 210 000 deaths from multi-drug resistant tuberculosis (MDR-TB) worldwide and an additional 25 100 deaths, solely in Europe, resulting from other multi-drug resistant pathogens, such as E.coli and MRSA (WHO; ECDC).[75] Between 2000 and 2010, global consumption of antibiotics in human medicine rose by 36% (van Boeckel et al.).[76] Without further action, the annual number of deaths due to antimicrobial resistance could escalate to about 10 million in 2050 (RAM [UK]).[77] A severe *influenza pandemic* could at present cause 62–360 million deaths (Murray et al.; McKibbin et al.; Taubenberger et al.; Osterholm).[78] Immediate economic losses from a severe flu pandemic would range from 3.1% to 12.6% of gross world product, averaging 5.57% (Brahmbhatt [WB]; Burns et al. [WB]; CBO; McKibbin et al.).[79] The next pandemic is inevitable (WHO),[80] and a new, mutated or resistant pathogen could trigger a pandemic (Spellberg et al.).[81] Vice versa, antimicrobial resistance could substantially worsen the impact of a pandemic (Morens et al.; WHO).[82] The recent and ongoing Ebola outbreak in Western Africa revealed lack of regional and global safety and

preparedness regarding emerging diseases (Chan [WHO]; Gostin et al.; Kimball et al.; Lancet; Philips et al.; WHO).[83] These major health risks could be addressed by a target to halt by 2030 the increase in the number of deaths due to antimicrobial resistance and to improve preparedness for and resilience against pandemics and emerging diseases. It could be added to target 3.3.

- *Climate change* would, without stronger measures for mitigation and adaptation, cause the biggest losses to the world economy, impair food production and increase disease and mortality (see diagram on losses above; IPCC; WB).[84] Therefore, at least the already agreed upon objective to limit global warming to a maximum 2° C above pre-industrial levels should be included in SDG 13 (UNFCCC).[85]

The post-2015 development agenda should cover these major issues by including quantified and time-bound targets. In order to aim for the same level of ambition as that achieved by the MDGs, new SDG topics such as indoor air pollution, pneumonia and occupational diseases and accidents should strive for *improving on their current trends in the number of deaths by 24% by 2030* (percentage points; see p. 5 above).[86] This group of three million-killer topics, together with hepatitis B and C, should be given the *utmost priority* for making the post-2015 targets more complete, based on the data presented above.

Importantly, there is currently one *major MDG target not continued* in the proposed SDG targets: providing antiretroviral therapy for HIV/AIDS and "coming as close as possible to the goal of *universal access to treatment* … for all those who need it" (by 2015).[87] SDG target 3.3 aims to end the epidemic of AIDS by 2030, but this does not necessarily imply that there will be provision of universal access to treatment on the way to 2030.

Further, there are cross-over topics and other topics that can help to address the above-mentioned matters and that are already addressed in several proposed goals and targets:

- cooperation, citizenship and democracy
- human rights and gender equality
- information and education, research and innovation.

Ensuring specified targets and including quantified and time-bound targets for those major challenges lacking these would not harm the delicate political balance of the outcome by the UN OWG. Instead, it would add to its political weight and transform the SDGs into a complete agenda to address the most severe problems – and, therein, opportunities – for global development.

5 Framing the 17 SDGs in a Small Number of All-Embracing Objectives

In order to communicate the post-2015 agenda effectively, it would be desirable to have a small number of goals. The MDGs were clustered into eight goals and successfully communicated, while having more than eight targets. Nevertheless, the UN OWG proposed 17 SDGs, a number which is not very suitable for communication purposes. This comparatively larger number stems partially from the SDGs being more comprehensive than the MDGs, but is also a result of the fragile political balance underlying the SDGs. Without unravelling the delicate package of the SDGs, a desirable small number of goals can

only be achieved by fully keeping the 17 SDGs and framing or clustering them in a smaller set of summary or all-embracing objectives. At the same time, it should be clarified that the all-embracing objectives neither replace the SDGs nor are of higher importance than the SDGs.

For a very similar purpose, the UN Secretary-General, Ban Ki-moon, proposed "six essential elements" in his synthesis report on the post-2015 agenda that "would help frame and reinforce the universal, integrated and transformative nature of a sustainable development agenda" (UN SG).[88] These six elements are dignity, people, prosperity, planet, justice and partnership, and they are accompanied by summary aims derived from the SDGs.[89] Related closely to this, the proposal by Global2015 suggests combining these elements and the summary aims to six elementary or all-embracing objectives in order to frame the 17 SDGs pragmatically. These summary objectives could help to effectively deliver the message of the post-2015 development agenda. They could read as shown on p. 15.

See next page

6 Looking towards the Review "Assessing Priorities for Sustainable Development Goals"

The main review will provide a data-based set of major global challenges, that arise due to a lack of access to vital resources. It will provide trend data and target achievements since 1990. Available trend data indicates that topics supplied with a target show more improvement than those without a target, and that the MDG targets performed better than other targets agreed upon worldwide by states. There are many topics with a similar severity to the MDG topics but they have no target so far. Several important topics do not only show insufficient improvement but even demonstrate a worsening trend.

The review will be an update of our proposal "Assessing Priorities for Rio+20" (November 2011),[90] using the latest data and more advanced methods. This update will include more specific recommendations for individual topics. For the session of the intergovernmental negotiations on the SDGs in March 2015, we will provide fact sheets for certain targets proposed by the UN OWG.

The subsequent next publication will also include topic-related human rights standards, recommended activities and interventions, as well as the costs and benefits of these measures, to the degree available. Global2015 will continue to monitor developments on the most important global challenges and related target achievements. We will also collaborate with governments, businesses, NGOs and scientific institutions to strengthen action to address the most relevant and imminent global challenges.

Framing the 17 SDGs in Six Elementary or All-embracing Objectives

I. Enhance human dignity by ending poverty and hunger, and fighting inequalities

- Goal 1: End poverty in all its forms everywhere
- Goal 2: End hunger, achieve food security and improved nutrition and promote sustainable agriculture

II. Place people at the centre by ensuring healthy lives, education and the inclusion of women and children

- Goal 3: Ensure healthy lives and promote well-being for all at all ages
- Goal 4: Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all
- Goal 5: Achieve gender equality and empower all women and girls

III. Promote prosperity by growing a strong, inclusive and transformative economy

- Goal 6: Ensure availability and sustainable management of water and sanitation for all[91]
- Goal 7: Ensure access to affordable, reliable, sustainable and modern energy for all[91]
- Goal 8: Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all
- Goal 9: Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation
- Goal 10: Reduce inequality within and among countries[92]

IV. Sustain our planet by protecting ecosystems for all societies and our children

- Goal 11: Make cities and human settlements inclusive, safe, resilient and sustainable[93]
- Goal 12: Ensure sustainable consumption and production patterns
- Goal 13: Take urgent action to combat climate change and its impacts
- Goal 14: Conserve and sustainably use the oceans, seas and marine resources for sustainable development
- Goal 15: Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss

V. Ensure justice by promoting safe and peaceful societies, as well as strong institutions

- Goal 16: Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels

VI. Reinvigorate global partnership by catalysing solidarity for sustainable development

- Goal 17: Strengthen the means of implementation and revitalize the global partnership for sustainable development

Goals 1–17 expressed exactly as in: UN OWG 2014, 6.
All-embracing objectives I–VI derived from: UN SG 2014, §§ 66–81 (six essential elements).

1 GBD 2015. The early online publication occurred in December 2014. – See full references in the sources list on p. 25.

2 GBD 2015, p. 118. The number 240 in the causes of death includes umbrella categories as well as specific categories, which leads to some double-counting.

3 WHO 2014. The number 163 in the causes of death (column GHE code) includes umbrella categories as well as specific categories, which leads to some double-counting.

4 OWG 2014.

5 UN 2014 (resolution by the General Assembly), 6.

6 Undernutrition (in childhood), diarrhoeal diseases: IHME [GBD] 2013, which provides trend data by the GBD study and related diagrams for 1990, 1995, 2000, 2005 and 2010; search terms: "by year Global Deaths Undernutrition", "by year Global Deaths Diarrhea".
HIV/AIDS: WHO 2014c (tabular data); global sums: review's calculations.
Tuberculosis: WHO 2014d (tabular data); global sums: review's calculations.
Average MDG trend (before/after 2005): review's calculations from the WHO, GBD and UNICEF data, using the mean of the topic-specific compound annual growth rates (assuming exponential change; see note 13 below).
Under-5 mortality: UNICEF 2014 (tabular data), sheet "Regional and Global Estimates", "Estimates of under-five deaths by UNICEF region", World, Median.
Malaria: WHO 2014e (tabular data), "Global".
Maternal conditions: WHO 2014f (tabular data) (ZIP archive,
file Web release 6 May/2014PublicRelease_code_data/data/outputdata/Final.estimates/uncertainty.who.region.csv, categories "MatDth", World).
Under-five deaths are shown at a 1/10 scale for easy trend comparison. The smaller scale also has an impact on the height level of the average MDG trend line but not on its relative change, which is the main focus here. The average MDG trend line only indicates the trend change before and after 2005; it does not reflect trend changes over the period 1990 to 2005. For the time frame before 2000, UN agencies do not provide mortality data on HIV/AIDS and malaria.
For the average total reduction achieved by the MDGs between 2005 and 2013 (26.2%) and the average total improvement on the trend before 2005 during the same time frame (15.4%), see note 12 below.
The average annual MDG trend before/after 2005 is derived from the mean of the compound annual growth rates of the MDG topics before and after 2005, respectively (see note 13 and 12 below).

7 Annual exponential change rates averaged from WHO, GBD and UNICEF trend data referenced in note 6 above, using the formula shown in note 13 below; review's calculations.

8 The previous trend increased from 1.888 million AIDS deaths to 2.252 million over the 4 years from 2001 to 2005, resulting in the following annual rate of growth:

$$(2.252 \text{ million} / 1.888 \text{ million})^{(1/4)} - 1 = 4.50\%.$$

By contrast, the 8-year trend 2005–13 lead to a reduction to 1.448 million deaths, resulting in a negative growth rate:

$$(1.448 \text{ million} / 2.252 \text{ million})^{(1/8)} - 1 = -5.37\%.$$

This results in a relative trend change by −9.87%, or a relative trend improvement by 9.87% (percentage points), annually between 2005 and 2013 (numbers of deaths: WHO 2014c; global sums and percentage rates: review's calculations).

9 WHO 2014d; global sums and percentage rates: review's calculations.

10 The annual rate of change was −1.21% from 2000 to 2005 and −4.30% from 2005 to 2013; the difference was −3.09% (percentage points) (WHO 2014e, "Global"; percentage rates: reviews calculations). Negative values indicate a reduction, which in the case of mortality is to be considered an improvement.

11 Based on annual percentage rates (review's calculations) derived from:
Under-5 mortality: UNICEF 2014, sheet "Regional and Global Estimates", "Estimates of under-five deaths by UNICEF region", World, Median.
Maternal conditions: WHO 2014f
(file Web release 6 May/2014PublicRelease_code_data/data/outputdata/Final.estimates/uncertainty.who.region.csv, "MatDth", World).
Undernutrition (in childhood), diarrhoeal diseases: IHME [GBD] 2013, search terms: "by year Global Deaths Undernutrition", "by year Global Deaths Diarrhea".

12 Mean trend before 2005: (4.50% + −0.775% + −1.21% + −2.84% + −2.44% + −4.42% + −2.69%) / 7 = −1.41%
Mean trend after 2005: (−5.37% + −3.71% + −4.30% + −3.30% + −2.75% + −3.98% + −2.64%) / 7 = −3.72%
Trend change per year: (−9.87% + −2.93% + −3.09% + −0.454% + −0.31% + 0.446% + 0.043%) / 7 = −2.31%

The average trend from 2005 to 2013 lead to a total reduction by 26.2%; cumulative exponential decrease due to the annual average MDG rate of change (−3.72%) over 8 years (2005–13): $(1 + (-0.0372))^8 - 1 = -0.2616 = -26.16\%$.
If the previous trend had continued, it would have caused a reduction by only 10.7%; $(1 + (-0.01411))^8 - 1 = -10.75\%$.
Therefore, the average MDG trend after 2005 resulted in a total improvement on the previous trend by 15.4% of the 2005 level by 2013; −26.16% − −10.75% = −15.4% (percentage points).

13 The statistical measurement used here is the annual exponential growth rate, also known as the compound annual growth rate (CAGR):

$$\text{CAGR} = (\text{second value} / \text{first value})^{(1 / \text{number of years})} - 1$$

The average annual rates of reduction (AARR), as deployed by UNICEF, show a positive value for a reduction.

14 OWG 2014, 9 (target 3.9).

15 See our previous proposal (Global2015 2014, 5), with regard to target 3.9 (at that time, 3.7) as proposed by the UN OWG (OWG 2014, 9).

16 Fukuda-Parr et al. [IPC/UNDP] 2010, 8. The authors refer more in general to the retrospective evaluation of implementation of the MDGs, for which, besides the rates of change, absolute target achievements must be considered still important.

17 See diagram on p. 3 and note 12 above.

18 Review's calculation of the exponential total reduction after 15 years, which is the cumulative growth predicted from the compound annual growth rate (CAGR, see note 13):

$$\text{total reduction} = (1 + \text{annual change rate})^{\text{number of years}} - 1$$

In the case of the average MDG trend since 2005 (−3.72%, see diagram on p. 3 above) extrapolated by 2030:

$$(1 + (-0.0372))^{15} - 1 = -0.434 = -43.4\%.$$

This result of the current trend was calculated based on 1 plus the 2005–2013 MDG average annual growth rate (−3.72%) on an exponent of 15 years (representing 2015 to 2030) minus 1.
The exponential calculation leads to the same result as adding, in an iterative manner, 15 times the percentage rate of the respective previous year to the previous value: 2015 value + annual percentage of the 2015 value, then the resulting 2016 value + annual percentage of this 2016 value, and continuing this iteration up until 2030.

19 The latest average annual MDG trend of −3.721% extrapolated for 20 years: $(1 + (-0.03721))^{20} - 1 = -53.2\%$.

20 UN 2012, §§ 5, 18; UN 2014a, 5.

21 For the achieved average improvement of 15.4% in the number of deaths, see diagram above (p. 3) and note 12 above.
The 24.2% reduction of the starting level is the difference in the results of two different mortality trends by 2030; the trend before the MDGs showed effect (before 2005) and the trend since they showed effect (2005–2013):
Before-2005 MDG trend (−1.41% per year) extrapolated for 2015–30: $(1 + (-0.0141))^{15} - 1 = -19.2\%$
After-2005 MDG trend (−3.72% per year) extrapolated for 2015–30: $(1 + (-0.0372))^{15} - 1 = -43.4\%$
The difference is −24.2% of the starting level (24.2 percentage points), maintaining the trend change achieved by the MDGs (review's calculations). Negative figures indicate a decrease (which represents an improvement).

22 In some instances, this review states that a trend improvement which has been calculated as a difference between two percentage reductions – or as percentage points – represents a certain fraction of the total starting level of the reduction (e.g. a reduction by 24.2 percentage points representing almost one quarter of the 2015 level). Mathematically, it would not be correct to equate percentage points and a fraction (because percentage points as a difference do not represent a proportion of the original value). However, in the case of this review all presented fractions refer to the same base value from which also the percentages underlying the percentage points were calculated from. The base value is always the absolute starting level of the corresponding reduction (i.e. the 2005 or 2015 number of deaths, respectively). Since the same base value is used, it can be justified to express percentage points in a fraction of the total (and the figures match accordingly, e.g. 24.2 percentage points being equivalent to almost one quarter of the 2015 level).

23 For the 24.2%, see note 21 above. For a 2010 base year this figure would be 28.4% of the starting level.
It would also be possible to focus on annual rates of change, but total reductions over the target period are easier to communicate, which is a desired feature of the targets.

24 Though a linear analysis would result in a lower annual percentage change (−3.29% instead of −3.72%), the linear decrease over 15 years calculated from the linear annual change would nevertheless be stronger than the exponential decrease predicted for the same time frame from the annual growth rate (−49.4% instead of −43.4%; review's calculations). The diagram depicts the linear and exponential trend indexed for the year 2015 (set as 100%) since it is the common starting point for targeted reductions.

25 Fukuda-Parr et al. [IPC/UNDP] 2010, 14.

26 IHME [GBD] 2013, search term: "by year Global Deaths Diarrhea"; percentage rate: review's calculation.
The GBD figure for unsafe water and sanitation is not used here because, for several reasons, it appears to underestimate the contribution of unsafe water and sanitation to deaths from diarrhoeal diseases (see our previous proposal, Global2015 2014, 13).
27 Quote: OWG 2014, 9; the topic is also related to the targets 3.3, 6.1 and 6.2. For the 43.4%, see note 18 above.
28 The current annual trend of 2.64% extrapolated for the 15 years by 2030: $(1 + (-2.64\%))^{15} - 1 = -33.1\%$.
29 IHME [GBD] 2013, search term: "by year Global Deaths Household air pollution"; percentage rates: review's calculations, $(3.479 \text{ million} / 3.690 \text{ million})^{(1/5)} - 1 = -1.17\%$.
30 Latest average annual trend (−1.17%) extrapolated for 2015–30: $(1 + (-0.0117))^{15} - 1 = -16.2\%$.
31 See note 21 above (on percentage points and fractions, see note 22).
32 IHME [GBD] 2013, search term: by year Global Deaths "Ambient particulate matter pollution" (the quotation marks are required); percentage rates: review's calculations, $(3.2235 \text{ million} / 3.1015 \text{ million})^{(1/5)} - 1 = 0.775\%$.
33 Latest average annual trend (0.775%) extrapolated for 2015–30: $(1 + 0.775\%)^{15} - 1 = 12.3\%$.
34 12.3% + (−24.2%) = −11.9%
35 Global2015 2014, 4–8; on opportunities to end the AIDS epidemic, see UNAIDS 2014, 296–299.
36 Azad 2008. A preliminary estimate showed an error of about 4% in the global summing of national trend improvements after 15 years.
37 24.2% of the starting level, or 24.2 percentage points; see p. 5 and note 23.
38 UN 2012, § 247.
39 OWG 2014, 7–24.
40 OWG 2014, 9, 8, 13. See also our previous proposal (Global2015 2014, 9).
41 Blakely et al. [WHO] 2004, 1942, 2068–2069; WHO 2002, 51 (strong associations with inadequate water and/or sanitation, indoor air pollution and underweight among children).
42 UN SG 2014, § 136.
43 UN SG 2014, § 137.
44 UN SG 2014, § 138.
45 OWG 2014, 9.
46 IHME [GBD] 2013, search terms: "by year Global Deaths "Ambient PM pollution" Ambient ozone pollution", "by year Global Deaths Lead".
47 Lead is also related to target 12.4: "by 2020 achieve environmentally sound management of chemicals and all wastes throughout their life cycle in accordance with agreed international frameworks and significantly reduce their release to air, water and soil to minimize their adverse impacts on human health and the environment" (OWG 2014).
48 From 1995 to 2010, the number of deaths attributable to the risk factor household air pollution decreased from 4.356 million to 3.479 million (IHME [GBD] 2013, search term: "by year Global Deaths Household air pollution"); percentage: review's calculation. See further details in our previous proposal (Global2015 2014, 5).
49 Indoor air pollution is also related to target 7.1, which does not refer to mortality: "by 2030 ensure universal access to affordable, reliable, and modern energy services". Such services could replace the indoor combustion of solid fuels without proper ventilation.
50 IHME [GBD] 2013, search term: "by year Global Deaths Diarrhea" (a decrease from 2.157 million deaths in 1995 to 1.446 million in 2010); percentage: review's calculation.
See further details in our previous proposal (Global2015 2014, 6). Diarrhoeal diseases are also related to the not quantifiable target 3.3 to "by 2030 … combat … water-borne diseases" and targets 6.1 and 6.2 to achieve access to safe drinking water and adequate sanitation for all by 2030 (success of these depend on the definition and measurement of safe water which had serious issues regarding the MDG target on safe water; WHO et al. 2011, 35; WHO et al. 2012, 5; Fewtrell et al. 2005, 44, 48; Bain et al. 2014, 1).
51 OWG 2014, 5 (§ 18); UN 2012, § 247.
52 GBD 2014 (tabular data), location_name: Global; year: 2013; age_group_name: Under 5, sum of the categories 5-14 years, 15-49 years and 50-69 years (for the 5–69 years age group; review's calculations), 70-80 years (which adds up to "All ages"); sex_name: Both sexes; cause_name: Diarrheal diseases, etc.; metric: Deaths; unit: Number; mean.
The 95% uncertainty range on diarrhoeal diseases, for example, is 1.15–1.38 million deaths among all ages in 2013.
For ***hepatitis B and C,*** the total of 1.39 million deaths among all ages in 2013 includes deaths caused by acute hepatitis B (68 600 deaths), acute hepatitis C (3450), liver cancer secondary to hepatitis B (300 000), liver cancer secondary to hep-

atitis C (343 000), cirrhosis of the liver secondary to hepatitis B (317 000) and cirrhosis of the liver secondary to hepatitis C (358 000); sum: review's calculation.

For ***pneumonia,*** no direct figure is provided by the GBD study. Instead, there is an estimate on lower respiratory infections (2.65 million deaths among all ages in 2013 [GBD 2015, 131 (table 2)]), which has been decomposed into the three most common types of pneumonia (H influenzae type B pneumonia: 109 000 deaths [GBD 2015, 146 (table 4); not considering deaths from five years upwards; p. 126]; pneumococcal pneumonia: 594 000; and respiratory syncytial virus pneumonia: 81 500; together 785 000 deaths; sum: review's calculation), influenza (105 000) and non-identified lower respiratory infections (1.76 million) (GBD 2015, 146 [table 4]). Lower respiratory infections encompass pneumonia as the main component, influenza and acute bronchitis. Therefore, the available figure on influenza was not included (on acute bronchitis, no mortality estimate is available). Furthermore, the figure on the three most common types of pneumonia does not cover pneumonia completely, so the figure on non-identified lower respiratory infections will include types of pneumonia but also a few other infections. Hence, the number of pneumonia deaths is between the figure on the three most common types of pneumonia (785 000) and the lower respiratory infections except influenza (but including the non-identified lower respiratory infections) (2.55 million). For the diagram, the mean was used; 1.67 million deaths among all ages, (785 000 + 2.55 million) / 2 = 1.67 million. This is more likely an underestimate than an overestimate, since acute bronchitis will cause fewer deaths than influenza. For the age-distribution, the GBD study provided figures on deaths under the age of five (414 000 due to the three most common types of pneumonia [sum: review's calculation] and 476 000 due to non-identified pathogens; GBD 2015, 146 [table 4]); the figure for the 5–69 years group was derived from the proportion of this age-group among all lower respiratory infections (GBD 2014; review's calculations).

53 GBD 2012a, 45–53 (web table 1: Global deaths attributable to risk factors by age and sex in 2010), for the under 5 years age group: categories from "Both Sexes, 0-6 Days" to "Both Sexes, 1-4 Years", for the 5–69 years age group: categories from "Both Sexes, 5-9 Years" to "Both Sexes, 65-69 Years" and for the 70+ age group: categories from "Both Sexes, 70-74 Years" to "Both Sexes, 80+ Years"; sums for the age groups: review's calculations.

Indoor air pollution: category "Household air pollution from solid fuels".

Outdoor air pollution: "Ambient particulate matter pollution" and "Ambient ozone pollution" (due to possible overlap between risk factors, for the diagram the mean was calculated between the minimum [the figure for particulate matter pollution] and the maximum [the sum of both categories]; review's calculations).

Undernutrition in childhood: "Child and maternal undernutrition". This covers risks to the child which result from undernutrition of the mother or from undernutrition of the child that has occurred during childhood up until the age of five, as well as a few deaths in higher age attributable to under-five undernutrition. It does not include deaths of people from the age of five onwards which are attributable to undernutrition during that age. On the discrepancies between the estimates by the GBD study and Black et al., see our previous proposal (Global2015 2014, 20).

Occupational diseases and accidents: "Occupational risk factors".

Lead pollution: "Lead exposure".

Total numbers of deaths can also be found in GBD 2012, 2238–2239.

The GBD update on risk factors providing data on 2013 is expected to be published soon. Trend data with more than two points in time (1990, 1995, 2000, 2005 and 2013) is scheduled to be released four months thereafter.

54 RAM [UK] 2014, 5: deaths per year due to antimicrobial resistance: "AMR now 700,000 (low estimate)". See note 75. Age-distribution is taken from tuberculosis (WHO 2014; review's calculations), since MDR-TB is the main contributor.

55 Murray et al. 2006, 221, 2214 (62 million [10^{th}-90^{th} percentile range 51–81 million]); McKibbin et al. 2006, 15, 26, 57 (two scenarios; severe: 71.1 million [also used by Burns et al. [WB] 2008, 4]; ultra [without the anomalously high elderly survival rates of the 1918 influenza pandemic]: 142 million); Taubenberger et al. 2006, 15, 21 (>100 million); Osterholm 2005, 1824 (180–360 million); the mean of the 5 estimates is 129 million deaths (review's calculation); assuming a severe influenza similar to the 1918 "Spanish flu" to be a once-in-a-century event leads to an annualized figure of having 1.29 million lives at risk, which is depicted in the diagram (review's calculation). A further, less detailed estimate puts the total figure for a severe pandemic at even 2.8 billion deaths (Leggett 2006, 794).

56 WHO 2014 (tabular data), sheet "Global2012", for the under 5 years age group: categories "0-27 days" and "1-59 months" in "Male" and "Female", for the 5–69 years age group: categories from "5-14 years" to "60-69 years" in "Male" and "Female", and for the 70+ age group: categories "70+ years" in "Male" and "Female"; sums for the age groups: review's calculations.

The WHO Global Health Estimates provide data neither on chronic hepatitis B and C nor on risk factors such as undernutrition, indoor and outdoor air pollution, occupational diseases and accidents as well as lead exposure.

On ***pneumonia:*** As with the GBD estimate (see note 52 above), the estimate on lower respiratory infections was used (3.05 million deaths in 2012; WHO 2014, sheet "Global2012"), from which deaths due to influenza were subtracted (the mean of 250 000–500 000 deaths per year; WHO 2014i); the age-distribution was derived from all lower respiratory infections; review's calculations.

57 3.10–3.15 million deaths under five attributable to child and maternal undernutrition in 2011 (Black et al. 2013, 433 [UN-based and NIMS-based figures], 442 [joint effects of stunting, wasting, fetal growth restriction, suboptimum breastfeeding, and vitamin A and zinc deficiencies]). The diagram shows the mean (review's calculation). The age-distribution was not provided by Black et al. and therefore taken from GBD 2012a (review's calculation).

As with the GBD estimate, this covers risks to the child which result from undernutrition of the mother or from undernutrition of the child which occurred during childhood up until the age of five, as well as a few deaths in higher age attributable to under-five undernutrition. It does not include deaths of people from the age of five onwards which are attributable to undernutrition during that age. On the discrepancies between the estimates by the GBD study and Black et al., see our previous proposal (Global2015 2014, 20).

58 2.33 million deaths in 2010/11 (ILO 2014, 33–34, appendix; TUT et al. 2014, 13). The large difference between the GBD and ILO estimates can be explained by under-reporting and different but plausible estimation methods.

59 WHO 2014g, life expectancy at birth, both sexes, global, 2012.

60 ***Climate change:***

- Current annual losses: approximately US$141 billion (0.188% of global GDP); GHF 2009, 92 ($126 billion in 2010 [90% confidence interval $4.1–951 billion], presumably in 2010$) (adjusted to 2013$ using WB 2014, World: 'Inflation, GDP deflator (annual %)'); percentage: review's calculations using WB 2014, World: 'GDP (current US$)', 2013.
- Future losses in 2100 in the case of business as usual: 2.9–23% of global GDP in 2100 (averaging 7.92%) (Nordhaus 2008; Stern 2006; Roson et al. 2012; Kemfert [DIW] 2005; Evans et al. 2009; Ackerman et al. 2008; Kemfert et al. [DIW]). Business-as-usual scenarios for 2100 (the year for which the most projections are available), including non-market impacts and referring to 2.6–4.8° C above 1986–2005 levels (or 3.2–5.4° C above 1850–1900 levels, which are close to pre-industrial levels) in 2100 according to the scenarios in IPCC 2013, 20 (scenario RCP8.5, which shows an increase in average surface temperatures by 2.6–4.8° C for the period 2081–2100 relative to 1986–2005 [assessed likelihood is 66–100%; p. 4 (note 2)]), 19 (0.61°C difference between the averages of the periods 1850–1900 and 1986–2005), and WB 2012, 23–24:
    - Nordhaus 2008, 13, 181 (*2.9%* in losses of global GDP at 3.1° C above pre-industrial levels in 2100; included because the projected temperature level is very close to the range suggested by the IPCC)
    - Stern 2006, 156–159 (*2.9%* at 4.3° C in 2100 and for high climate sensitivity, *5.9%* at 3.5° C)
    - Roson et al. 2012, 11, 15 (*4.6%* at approximately 5.5° C [4.9° C above 2000 levels] in 2100; also cited in Tol 2013, 11 [table 1]; included because the projected temperature level is very close to the range suggested by the IPCC)
    - Kemfert [DIW] 2005, 135, 139, 140 (*6.4%* or $15.4 trillion at 3.5° C in 2100 with no policies by 2025, *8.3%* or $20 trillion at 4.3° C in 2100 with no policies by 2100 [second temperature level taken from figure 3 (p. 139); percentages: review's calculations from the data provided ($12 trillion equal to around 5% of the projected global GDP [p.140], (5 / 12) × 15.4 = 6.4% (first percentage), (5 / 12) × 20 = 8.3% (second percentage)])
    - Evans et al. 2009, 22 (*6.4%* at 3.9° C in 2100, considering catastrophe risks and increased damages)
    - Ackerman et al. 2008, 10, abstract (*10.8%* in 2100; no temperature level provided, but referring to a high climate sensitivity and therefore high global warming [similar to Stern 2006])
    - Kemfert et al. [DIW] 2005, 35–38, 31, 32 (*23%* at 4.3° C in 2100, considering feedbacks with trade and investment, and ancillary costs due to air pollution; also in OECD 2008, 281).

  Mean of these *9* projections and percentage: review's calculation. Since the purpose of the indicator is not a cost-benefit analysis, no discounting was applied to future losses (see WB 2010, 49).

  The current and future losses mentioned above do not include the recent estimates by DARA 2012 and Tol [CC] 2011 for reasons stated in our previous proposal (Global2015, 19 [note 65]).

Financial instability: approximately 3.67% of global GDP in average losses in 2010–13. The average annual rate of exponential growth of real GDP from 1990 to 2007 was 2.97% globally, and over 2007–13 it averaged at 1.78% (derived from World Bank data). This accounts for 1.19% (percentage points) less annual growth (hence, the –2.09% recession of

2009 has not been offset so far). However, the 2013 figure may represent a second trough year within the time frame since 2007, which could lead to an overly negative picture. Therefore, instead of the 2013 figure the mean from 2010 (which had a high growth rate of 4.07%) to 2013 was used to compare with the pre-crisis trend. Similarly, the period 1990–2007 was chosen to serve as a long-term measurement of comparison, to cover several full periods or patterns of minimum and maximum annual growth rates (similar to business cycles), to provide a middle ground in estimating the long-term rate and level of GDP growth, and to compensate for the strong growth in the years before the crisis which is often considered bubble growth. From the average growth rate of the 1990–2007 period, a pre-crisis trend of GDP up until 2013 was calculated. To prevent the starting year from influencing the level of calculated GDP, the GDP level was adjusted to an average level derived from the 2000–2007 period (from each year of this period onwards, a trend based on the average growth rate 1990–2007 was calculated, and from the resulting 2007 GDP levels the average was taken as the starting point for the reference trend up until 2013; this averaging leads to a lower losses estimate [also in comparison to simply taking the 2007 or 2008 GDP as the starting point]). Actual GDP in 2010–13 was on average 3.67% below the GDP expected from the pre-crisis trend. Data: WB 2014, 'GDP growth (annual %)' (based on constant 2005 US Dollars) and 'GDP (constant 2005 US$)' (both already adjusted for inflation); means, trend and percentages: review's calculations.

Additionally, fiscal losses of $1.44 trillion were incurred due to banking crises, currency crises, and sovereign debt crises in less developed countries, which divided by 23 years, equals $69.5 billion or 0.0928% of global GDP per year (WB 2014a: $1 trillion amounting from 1980 to 2002 [years taken from the diagram], presumably in 2005$) (adjusted to 2013$ using WB 2014, world, 'Inflation, GDP deflator (annual %)'); division, adjustment for inflation and percentage: review's calculations (using WB 2014, world: GDP in current US$).

The two losses amount to 3.76% of gross world product (assuming the second type of losses persisted); sum: review's calculation using WB 2014, World: GDP (in current US$), 2013.

Antimicrobial resistance: RAM [UK] 2014, 6 (2–3.5% of global GDP by 2050 due to a continued rise in antimicrobial drug resistance; based on scenarios modelled by RAND Europe and KPMG [p. 7]).

Biodiversity and ecosystems degradation: $846 billion to $2.96 trillion lost per year (1.13–3.95% of global GDP), comprising of:

- $664 billion to $2.77 trillion per year due to invasive species (Pimentel et al. 2001, 14: $336 billion in six large countries of different income levels, extrapolated to $1.4 trillion globally, presumably in 1998$ [since referring to 1998 GNP]) (adjusted to 2013$ using WB 2014, 'Inflation, GDP deflator (annual %)' for the USA, the UK, Australia, South Africa, India and Brazil; adjustments for inflation, and resulting sums: review's calculations)
- $77 billion per year due to underperforming fish stocks (WB 2009, 41: $51 billion in 2004 [80% confidence level $37–67 billion], presumably in 2004$) (adjusted to 2013$ using WB 2014, world, 'Inflation, GDP deflator (annual %)')
- $89 billion per year in lost services from land-based ecosystems, not considering invasive species (Braat et al. [TEEB] 2008, 11, 136: €50 billion in 2000 (annual cost continuing in 2050, including direct and indirect impacts on GDP: actual costs, income foregone and welfare costs [p.121]), in 2007€ [p. 122]) (converted to $68.6 billion (in 2007$) using FRB 2011 and adjusted to 2013$ using WB 2014, world, 'Inflation, GDP deflator (annual %)')
- $16–24 billion per year due to illegal logging (WB 2004, 1: $10–15 billion, presumably in 2003$) (adjusted to 2013$ using WB 2014, world, 'Inflation, GDP deflator (annual %)').

Unsustainable resource use: 1.13–9.42% of annual global GDP (averaging 4.91%) at risk within 20 years; IMF 2011, 102–109: four scenarios on oil scarcity:

- decrease of annual GDP by 2.90% in the benchmark scenario on oil scarcity (IMF 2011a, Real GDP, year 20)
- 1.13% decrease in the alternative scenario 1: greater substitution away from oil (IMF 2011b, Real GDP Upside scenario, year 20)
- 9.42% decrease in the alternative scenario 2: greater decline in oil production (IMF 2011c, Real GDP Downside scenario, year 20)
- 6.20% decrease in the alternative scenario 3: greater economic role for oil (IMF 2011d, Real GDP Downside scenario, year 20).

No estimates on the probabilities of occurrence for the scenarios available (in the diagram assumed 50% for the average of the four scenarios, which may be an underestimate; minimum in the diagram: alternative scenario 1 weighted by a 50% probability; maximum: alternative scenario 2 not weighted).

Road accidents: approximately $1.37 trillion in losses per year (1.83% of global GDP), according to WHO 2004, 15–16 (derived from TRL 2000, 11 [latest available data], see also WHO 2009a, 2), losses from road accidents comprise about

2% of gross national income (GNI, formerly GNP) in high-income countries, 1.5% of GNI in middle-income countries and 1% of GNI in low-income countries; review's calculation using the following figures from WB 2014, GNI (current US$), 2013:
($50.7 trillion in GNI × 0.02) + ($23.6 trillion × 0.015) + ($0.578 trillion × 0.01) = $1.37 trillion (in 2013$).
The percentage of total GNI is almost the same as in WHO 2004, 15 (table 5); percentage: review's calculation using WB 2014, GDP (current US$), World, 2013.

Indoor air pollution: 1.29% of gross world product in 2010. This is the low estimate according to the data and methodology used in Hutton [CC] 2011 (see the section below on outdoor air pollution in this note). The baseline estimate for indoor air pollution is 2.9% of global GDP in 2010 (p. 22 [table 6]). Mortality accounts for approximately 83.1% of these (86% in less developed countries [p. 30 (fig. 21)] and only 32% in developed countries [29 (fig. 20, both figures taken from the diagrams)]; however, developed countries only contributed 5.6% of the losses in 2010 [share of total cost in %, p. 22 (table 6)], so the resulting weighted mean is 83.1% [(86% + (32% × 5.6%)) / (100% + 5.6%) = (86% + (32% × 0.056)) / (1 + 0.056) = 83.1%]; review's calculation). The mortality-related proportion can be changed according to the ratio between the low and the baseline value of a statistical life (1/3). Then, the changed mortality-related proportion can be combined again with the (unchanged) losses not related to mortality (the remaining 16.9%) by adding these together. The review's calculation is as follows:
(2.9% × 83.1% × (1 / 3)) + (2.9% × 16.9%) = (2.9% × 0.831 / 3) + (2.9% × 0.169) = 0.803% + 0.490% = 1.29%.

Food insecurity: $878 billion (1.17% of global GDP) per year in food losses and waste (FAO 2013, 55; $750 billion lost in 2007, expressed in 2009 producer prices of about 180 agricultural products in more than 100 countries [excluding fish and seafood]) (adjusted to 2013$ using WB 2014, world, 'Inflation, GDP deflator (annual %)'); percentage: review's calculation using WB 2014, World: 'GDP (current US$)', 2013.

Outdoor air pollution: 1.15% of global GDP in 2010. This is the low estimate according to the data and methodology used in Hutton [CC] 2011:

- The estimated losses include premature mortality, building and other material damage, health care costs, productivity losses from morbidity, natural resources and crop damage, and visibility damage resulting from anthropogenic outdoor air pollution (Hutton [CC] 2011, 7, 13, 28 [figure 18], 29 [figure 19]).
- Mortality is the main factor in this estimate and related economic losses are calculated in a way that is not directly comparable to most estimates on other topics used in this review. The estimate is based on the willingness-to-pay approach which usually results in much higher figures than deriving productivity losses from lost years of life. Since most estimates on mortality-related economic losses in this review use the latter method, comparison between topics would be affected by using an estimate based on the other method.

For the aforementioned reason, this review uses the low estimate outlined by Hutton, which is closer to an estimate derived from productivity losses. Hutton uses a "value of statistical life" of $3 million in developed countries and $685 000 in less developed countries for the baseline estimate, reflecting different income levels (in 1990$; p. 14–15, 31). For the low estimate, the figures are $1 million and $228 560, respectively (p. 15, 21). Correspondingly, Hutton provides different figures on economic losses due to air pollution (outdoor and indoor pollution combined), a baseline estimate of 5.4% of gross world product in 2010 and a low estimate of 2.1% (p. 31).
Such a figure is not provided for outdoor air pollution solely but can be derived from the data provided as follows. The baseline estimate for outdoor air pollution is 2.7% of global GDP (2010) (p. 22 [table 6]). Mortality accounts for approximately 86% of these (p. 28 [fig. 18], 29 [fig. 19], read from the diagrams). This proportion can be changed according to the ratio between the low and the baseline value of statistical life (1/3). Then, the changed mortality-related proportion can be combined again with the (unchanged) losses not related to mortality (the remaining 14%). The review's calculation is as follows:
(2.7% × 86% × 1 / 3) + (2.7% × 14%) = (2.7% × 0.86 / 3) + (2.7% × 0.14) = 0.774% + 0.378% = 1.15%.
For 2050 and with no change in policy trends, the same percentage of gross world product is projected to be lost (p. 22 [table 6]).
By using economic losses data this proposal in no way suggests the value of a human life is limited to economic dimensions and nor that it is of a different value in different world regions.

Occupational diseases and accidents: $567 billion in annual losses (0.757% of global GDP), comprising:

- approximately $274 billion in the USA (Leigh 2011, 728, 740: $250 billion in 2007, in 2007$ [p. 744]) (adjusted to 2013$ using WB 2014, USA, 'Inflation, GDP deflator (annual %)')

- $293 billion in 14 EU countries (EU-OSHA 1998, 31: ECU143 billion, in 1995ECU [p. 30]; sum: review's calculation) (converted to US$185 billion using NBH 2013, annual average, and adjusted to 2013$ using WB 2014, EU, 'Inflation, GDP deflator (annual %)').

Sums and percentage: review's calculations (using WB 2014, World: 'GDP (current US$)', 2013).

Soil degradation: $44.7–963 billion, averaging 0.673% of global GDP in losses per year. Estimates include:

- $44.7 billion (UNEP 2011 [LADA project – Land Degradation Assessment in Drylands], 1, 9: $40 billion from land degradation, without considering hidden costs of increased fertilizer use, loss of biodiversity and loss of unique landscapes; presumably in 2010$) (adjusted to 2013$ using WB 2014, world, 'Inflation, GDP deflator (annual %)')
- $963 billion (Pimentel et al. 1995, 1121, and UNCCD 2011, 3: $400 billion from soil loss, presumably in 1994$) (adjusted to 2013$ using WB 2014, world, 'Inflation, GDP deflator (annual %)').

Mean and percentages (0.060–1.29%): review's calculation using WB 2014, World: 'GDP (current US$)', 2013.

61 From 1990 to 2009, material intensity has decreased by approximately 11.8% globally from 1.53 to 1.35 kg per $ in GDP (Krausmann et al. 2011, table on figure 2.c; percentage: review's calculation). However, the rate of this decrease had slowed down in the latter years assessed (and it has even turned into a small increase in midst of the crisis in 2009).
Furthermore, annual global resource extraction had increased over the same time frame, and much more than material intensity: by even 63.8%, from about 41.60 billion tonnes to 68.14 billion tonnes (Krausmann et al. 2011, table "Material flow data"; percentage: review's calculation).

62 UNCCD 2014, 14.

63 See Global2015 2014, 3–4. In the final outcome document, the UN OWG added to "combat hepatitis, water-borne diseases, and other communicable diseases" by 2030 (OWG 2014, target 3.3, p. 9).

64 GBD 2014 (for details see the second paragraph of note 52 above). For comparison, see diagram on p. 10 above.

65 IHME [GBD] 2013, search term:
"by year Global Deaths Hep B "Hep C" Cirrhosis-HepB Cirrhosis-HepC Liver-HepB Liver-HepC".
For other major contagious diseases (as shown in the diagrams on p. 10), see trend data in IHME [GBD] 2013 (on 1990, 1995, 2000, 2005 and 2010) and GBD 2015, 131 (table 2), "All ages deaths (thousands)", "Median % change" (between 1990 and 2013).

66 WHO 2010, § 1; referring to hepatitis C.

67 See details and recommendations in our previous proposal (Global2015 2014, 8).

68 Latest estimates on under-five mortality from pneumonia:

- 414 000 deaths in 2013 due to the three most common types of pneumonia (GBD 2015, 146 [table 4]; sum: review's calculation), not including all types of pneumonia and not including deaths under the age of one month (p. 126)
- 935 000 deaths in 2013 (95% uncertainty range 817 000 to 1.06 million), including deaths in neonates aged 0-27 days (Liu et al. 2015, 432 [table, annotations; results]; WHO 2014a)
- 1.3 million deaths in 2011, including neonatal deaths (Fischer Walker et al. 2013; data used for the study was extracted from the Child Health Epidemiology Reference Group [CHERG] [see its appendix]).

69 IHME [GBD] 2013, search term: "by year Deaths LRI" (using lower respiratory infections as a proxy for the trend in pneumonia) (a decrease from 3.362 million deaths in 1995 to 2.814 million in 2010; percentage: review's calculation).

70 For hepatitis B and C and other major contagious diseases (as shown in the diagrams on p. 10), see trend data in IHME [GBD] 2013 (on 1990, 1995, 2000, 2005 and 2010) and GBD 2015, 131 (table 2), "All ages deaths (thousands)", "Median % change" (between 1990 and 2013).

71 In the final report by the UN OWG, pneumonia may be included without explicit mention in target 3.3 to "by 2030 … combat … communicable diseases", but even then still lacks a quantifiable target level.

72 GBD 2012, 2239 (852 000 deaths from occupational risks in 2010 [95% uncertainty interval 660 000–1.06 million]); WHO 2009, 50 (987 000 deaths from occupational risks in 2004; sum: review's calculation); TUT et al. and ILO 2014, 33–34, appendix (2.33 million in 2010/11). The large differences between the estimates derive from under-reporting and different but plausible estimation methods.

73 ILO 2014, 33–34, appendix; IHME [GBD] 2013, search term: "Occupational risks".

74 RAM [UK] 2014, 5: deaths per year due to antimicrobial resistance: "AMR now 700,000 (low estimate)".

75 No comprehensive data:

- approximately 210 000 people died in 2013 from multidrug-resistant tuberculosis (MDR-TB) (range: 130 000–290 000)

(WHO 2014h, 75)

- annually from other infections resistant to multiple drugs:
  - between 23 000 and 100 000 people died in the USA (CDC 2013, 13; Lo Fo Wong [WHO] 2013)
  - 80 000 in China and
  - 30 000 in Thailand (Lo Fo Wong [WHO] 2013)
  - as well as 25 100 people in the EU, Iceland and Norway in 2007 (ECDC et al. 2009, 14, 4).

Sums: review's calculations (no overlap).

76 Van Boeckel et al. 2014, 745; also referred to by RAM [UK] 2014, 4.

77 RAM [UK] 2014, 6.

78 See note 55 above.

79 Available estimates:

- 3.1% of global GDP (Brahmbhatt [WB] 2006, 10, and WB 2006)
- 3.1% (Burns et al. [WB] 2008, 4)
- 4.25% (CBO 2006, 1, 12)
- 4.8% (severe pandemic; McKibbin et al. 2006, according to Burns et al. [WB] 2008, 3)
- 12.6% (ultra pandemic; McKibbin et al. 2006, 1, 26).

Mean of the 5 estimates: review's calculation.

80 WHO 2007, xxi, 50 (referring to avian H5N1 influenza).

81 Spellberg et al. 2008, 155.

82 Morens et al. 2008, 2, 7; WHO 2007, 1.

83 Chan [WHO] 2014; Gostin et al. 2014; Kimball et al. 2014; Lancet 2014 and 2014a; Philips et al. 2014; WHO 2014b.

84 IPCC 2007, 791; IPCC 2014, 20: climate change related impacts on human health will increase the risk of injury, disease and death as a direct cause of extreme heat waves, fires and other extreme weather events (very high confidence) as well as a result of increased risks of water- and food-borne diseases (very high confidence) and vector-borne diseases (medium confidence) and under-nutrition resulting from decreased food production (high confidence). Although humankind will need growth in mean crop yields, they are expected to decline from 2030 onwards due to extreme climate and weather events by 1% per decade (IPCC 2014b, 3, 22 [medium confidence; likelihood 66–100% (IPCC 2014, 4 [note 2])]).

85 UNFCCC 2010, § 1 (4).

86 Data on current trends (2005–2010) is available at IHME [GBD] 2013. Updated GBD trend data for 2005–2013 on diarrhoeal diseases, hepatitis B and C and pneumonia will likely be released in April 2015. A GBD update on risk factors such as indoor air pollution, as well as occupational diseases and accidents is also on the way. The WHO provides only trend estimates for the data points 1990 and 2012 (and more detailed time series on HIV/AIDS, tuberculosis, malaria and child underweight). However, trend data is not immediately needed if a target is defined in trend-related terms, which also has several other advantages (see p. 7).

87 UN 2006 (General Assembly resolution), § 57 d (target year 2010); UN 2011 (resolution by the General Assembly), § 51 (target year 2015). The second resolution also included the target to provide, by 2015, antiretroviral treatment to 15 million people who require it (§ 66); this target has also, so far, not been proposed to continue.

88 UN SG 2014, § 66.

89 See UN SG 2014, § 66 (fig. 1) and §§ 67–81.

90 Global2015 2011.

91 UN Secretary-General Ban Ki-moon has included the SDG targets 6 and 7 in the essential element "prosperity" (UN SG 2014, § 74). It could also be included in the element "people", since the major impact (in terms of mortality from indoor air pollution and diarrhoeal diseases) is related to "ensuring healthy lives". In the MDGs, safe water and sanitation was included in environmental goal 7. Since goals for sustainable development include different dimensions, it lays in their nature that it is difficult to establish clear and strict clustering.

92 Since SDG 10 refers to inequality, the phrase "and fighting inequalities", which is included in the essential element "dignity" (UN SG 2014, heading for § 67; see also § 68), could be moved from the objective for the element "dignity" to the objective for the element "prosperity" (number III). Alternatively, SDG 10 could be moved to a position next to SDGs 1 and 2.

93 UN SG 2014 refers to this goal to a lesser degree in the element "prosperity" (§ 73: "resilient … settlements") and to a greater degree in the element "planet" (§ 75: "reduce disaster risk and build resiliencies. We must protect … our global heritage... and … advance … resilient infrastructure").

Annotations

For numeric names the short scale is used:
1 billion = one thousand million = 10^9 = 1 000 000 000
1 trillion = one thousand billion = 10^{12} = 1 000 000 000 000

All numbers are shown to three significant digits, if available (no matter if and where the decimal point may appear). This keeps the rounding error below ±0.5%. Nevertheless, all calculations are based on unrounded numbers.

All figures in dollars refer to US dollars, unless otherwise stated. To account for inflation, all monetary figures are adjusted to 2013$ (using WB 2014, 'Inflation, GDP deflator (annual %)').

Terms on regions or country groups are used according to the source referred to and are usually specified at those sources.

Almost all available data on global conditions is of low precision. Most data on the largest problems facing humankind are only partially taken from actual measurements of specific cases. More often, estimates are based on modelling and extrapolation. As a result, the data base is far from meeting the motto of the WHO Report 2005:

"Make every mother and every child count".

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Contact

Global2015 e.V.
Trautenaustrasse 5
10717 Berlin, Germany

Phone: +49 (0)30 96 534 777
Web: www.Global2015.net
E-Mail: contact@Global2015.net