
SUPPORTING INFORMATION

Variations in Sustainable Development Goal interactions: Population, regional, and income disaggregation

Anonymous Authors

Supporting Text

Text S1: Comparison of applied correlation coefficients

To illustrate the strengths and limitations of each correlation method, namely, Pearson's r , Spearman's r_s , Kendall's τ , Hoeffding's D and MIC , we perform a systematic simulation using the official *Global SDG Indicator Database*. Here, we compare the outcome of the correlation methods and detect interactive effects as well as possible types of dependencies (linear, non-linear monotone, non-monotone and non-functional).

In Figure S2 (A), Pearson in comparison to Spearman illustrates a diagonal relation from $(-1/-1)$ to $(1, 1)$ with a high range of variety. This may be partially due to Pearson's higher sensitivity to outliers or rather data distribution (Duan and Song, 2016; Wang et al., 2017). Figure S2 (A) shows further on a high density around zero and medium density that is more leaning towards the positive area of relations. The higher amount of positive rather than negative relations represents a consistent phenomenon within the interactions of the *Global SDG Indicators Database*. However, the Pearson correlation is sensitive to linear correlations, while Spearman is more robust to detect also the non-linear correlations. Consequently, a perfect Spearman correlation coefficient is obtained when x and y are related through any monotonic function. In contrast, the Pearson correlation coefficient only gives a perfect value when x and y are related through a linear function (Duan and Song, 2016). Therefore it is likely, that interactions (represented by one dot in Figure S2) with $r \approx 1$ and $r_s \approx 1$ represent monotone linear relations. Interactions with $r \leq 0.5$ and $r_s \approx 1$ are likely to be non-linear dependencies or linear dependencies with outliers. This is because the Spearman correlation coefficient limits the outliers to the value of its ranks (Duan and Song, 2016). An analogous rationale applies in cases of negative correlations.

Regarding the comparison of the two non-parametric measures by Spearman and Kendall, we can recognize a highly shaped S-form leaning towards more positive relations in Figure S2 (B). The statistical inference of the interrelation between both correlation coefficients complies the defined calculations $-1 \leq 3\tau - 2r_s \leq 1$ (Daniels, 1944) and yields the set Ω (Schreyer et al., 2017).

However, we do not apply Kendall's correlation coefficient in the analysis. This is because Kendall's τ is equivalent to Spearman's r_s in terms of the underlying assumptions and the coefficients differ in a way that if $\tau(x, y)$ is known also $r_s(x, y)$ can be assumed and vice versa.

When considering Hoeffding's D and MIC measures, we first note that both coefficient values range at different intervals as Pearson's and Spearman's correlation.

In consideration of MIC , linear relationships score high under both tests, r and MIC [Figure S2 (C)], whereas dependencies detected by MIC and not by r may probably be non-linear. Both r and MIC yield low scores for statistically independent variables, which also applies for Spearman in comparison to MIC . Figure S2 (D) exemplifies this comparison, where high scores of both correlations, r_s and MIC tend to assign monotonic relations. Low Spearman scores and high MIC scores, in contrast, may illustrate non-monotonic functions. For that reason, the form of Figure S2 (D) is more sharpened as the one of Figure S2 (C).

High Hoeffding's D scores tend to be assigned only to relationships with high r_s [Figure S2 (E)]. Accordingly, this may indicate non-linear relations within the *Global SDG Indicators Database* leaning more towards synergetic interactions rather than impeding. If interactions have low scores on both, Spearman and Hoeffding correlation, it reflects a non-functional relationship between the SDG indicators. However, low ranks with $r_s \approx 0$ and very high ranks for Hoeffding's D may indicate non-monotonic relations, what Figure S2 (E) does not necessarily reflect. For that reason, we could establish the hypothesis that non-monotonic relations do not exist between the SDG indicators when considering the Hoeffding's dependence measure and MIC .

Accordingly, the performance of MIC resembles the one of Hoeffding's D measure. On the one hand, Figure S2

(F) shows the highest density of all scatters plots what might illustrate the area of non-functional indicator relations in the *Global SDG Indicators Database*. On the other hand, the relation of Hoeffding's D and MIC values increases from ($D \approx 0, MIC \approx 0$) to ($D \approx 1, MIC \approx 1$). This D-MIC-curve increases monotonously and indicates simultaneously an increasing amount of strong functional relations across SDG indicators. Nonetheless, MIC exhibit more relations with $MIC > 0.8$ then the values of Hoeffding's D . This could be due to the fact that MIC should fulfill two heuristic properties, namely generality and equitability. In the end, both correlation analyses do identify different relations and characterize them according to linearity and monotony. However, due to these explained characteristics, we apply MIC over Hoeffding's D for our analysis.

The comparison and evaluation of the performance of the correlation coefficients based on the *Global SDG Indicators Database* lead not only to a better understanding of the possible characteristic of SDG indicators but also of the correlations characteristics. Though using various coefficients in comparison it is also easier to detect independencies between variables. This, in summary, is helpful to derive a useful method of distinguishing characteristics of SDG interactions.

Text S2: Minimal sample size

For distinguishing linear from non-linear relations, we, first, use the available minimal sample size (Raosoft Inc., 2004) and, second, the non-linearity estimator $MIC - r^2$ suggested by Reshef et al. (2011) (Text S3). We consider indicator interactions consisting of at least 10 data point for any correlation measurements. The scientific field of correlations and non-linearity does not define a generally agreed on minimum sample size to detect non-linear relations. Nevertheless, 10 pair-wise data point for an SDG indicator interaction, representing 10 countries, will not be enough for a clear interpretation of non-linearity at a global scale. Consequently, we access procedures from the field of survey sample size determination. This estimation can assure an adequate performance to identify statistical significance for the desired outcome of non-linearity. The input variables for the sample size calculation are:

- the population size – demographic: here a total of 247 countries and areas worldwide
- the margin of error (confidence interval) – the amount of error to tolerate: 5%
- the confidence level – the amount of uncertainty to tolerate: 90%
- and the response distribution (standard of derivation) – expected variance in the response: 50%.

As a result, the recommended minimum sample size is 130 countries. With this sample size, it is likely to get a sufficient answer for non-linear indicator interactions. The relevant minimal sample sizes to detect non-linearity for the population groups are listed in Table S4, for the income groups in Table S5, and for the regional groups in Table S6.

Text S3: Non-linearity estimator

The second essential factor for identifying non-linearity constitutes the $MIC - r^2$ estimator introduced by Reshef et al. (2011). With high values of MIC and simultaneously $MIC - r^2 \approx 0$, the dependency is likely to be mainly linear. Otherwise, if r_s , MIC and the estimator $MIC - r^2$ score high values, the detection of non-linear dependencies is likely (Morelli et al., 2018; Reshef et al., 2011). Additionally, Reshef et al. (2011) emphasis in their research that while examining their 1001 top-scoring non-linear relationships, that $MIC - r^2 > 0.2$ could be determined. Therefore, we apply the value 0.2 as a threshold for the distinguishing of linearity from non-linearity. For this reason, we use the

joint analysis of Spearman's r_s and $MIC - r^2$ to investigate the nature of SDG interactions.

Text S4: Variation in SDG Interactions across scales

We identify relations between SDG indicators not only at the global scale but further on within different population, income, and regional groups.

SDG indicators shall be disaggregated where possible. Nonetheless, the whole effectively usable spectrum of disaggregation available within the *Global SDG Indicators Database* includes gender-disaggregated, age-disaggregated and geographical-disaggregated SDG indicators. However, these disaggregation scales are not done for every SDG or SDG indicator (Table S3). The gender classification contains two population groups, namely the female and male population. The locality classification contains two population groups, namely the rural and urban population. The age classification, in contrast, contains 49 different population groups. Because there is no uniform grouping of ages and the borders of the ages become indistinct with one another, we simplified the comparison into younger (age less than 30 years) and elderly (age equal or more the 30 years) population.

Further on, countries are quite often classified by different factors including the gross national income (GNI) per capita, the value of a country's annual final income divided by its population (World Bank Group, 2018). This criterion is often used to reflect a country's economic growth, social justice and human well-being. Therefore, we use the World Bank Atlas method (World Bank Group, 2018) of income grouping as an orientation for this study. Four different income-based groups according to the 2017 GNI per capita occur divided into the Low- (LIC), Lower-middle- (LMIC), Upper-middle- (UMIC) and High-income Group (HIC). The country-specific allocation of income-based groups can be seen in Figure S2. This allows inferences on economic components and their interactions with the SDGs.

However, social and environmental factors representing the countries may be neglected. Thus, we use the United Nations Regional Groups representing five geopolitical groups of UN member states (state: 2014) (UN, 2018). We summarized these five groups again into four main regions for the purpose of statistical analysis by merging the Eastern and Western European Group together. The geographic regions and country-specific allocation are shown on the map in the Figure S3, representing the Western World (WW), Latin America (LA), Asia-Pacific (AP), and Africa (AF).

Text S5: Mathematical procedure of detecting similarities and differences across income-based and regional groups

We define a similarity across the income and regional groups if all four groups exhibit the same outcomes. In case of synergies, represented by S , this means $S > x_s$ and in case of trade-offs, represented by T , $T > x_s$ with $S = S_{ml} + S_{mnl}$ and $T = T_{ml} + T_{mnl}$ of the respected group, x_s being the highest average value of S_{ml} and S_{mnl} interactions among the four income-based (LIC in Table S5) or regional groups (LA in Table S6) and x_t being the highest average value of T_{ml} and T_{mnl} interactions among the four groups. Hence, the different percentage values between S and T similarities are in relation to the distribution of synergies and trade-offs. Differences across the income-based and regional groups exist, if one or several groups exhibit a certain range, represented by R , of synergies or trade-offs compared to one or several other groups. We determine a significant difference among the groups if $R > 50\%$.

114 Supporting Figures

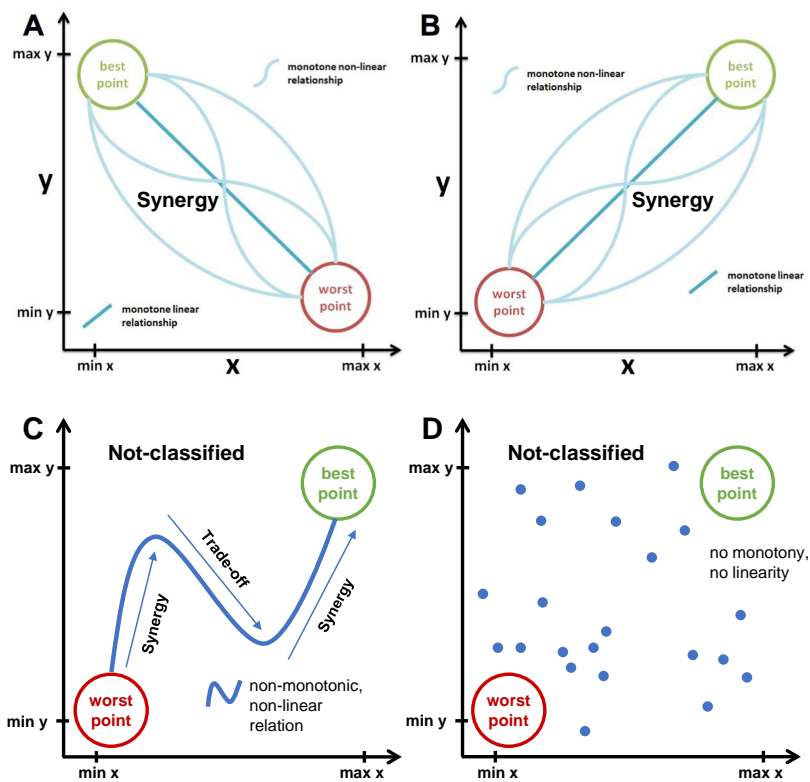


FIGURE S1 Examples of SDG indicator interactions A) from max x/min y to min x/ max y representing a synergistic monotone linear or non-linear relations; B) from min x/ min y to max x/ max y representing a synergistic monotone linear or non-linear relations; C) from min x/ min y to max x/ max y representing a not-classified non-monotonic non-linear relation; and D) from min x/ min y to max x/ max y representing no relation with no monotony and no linearity being not-classified.

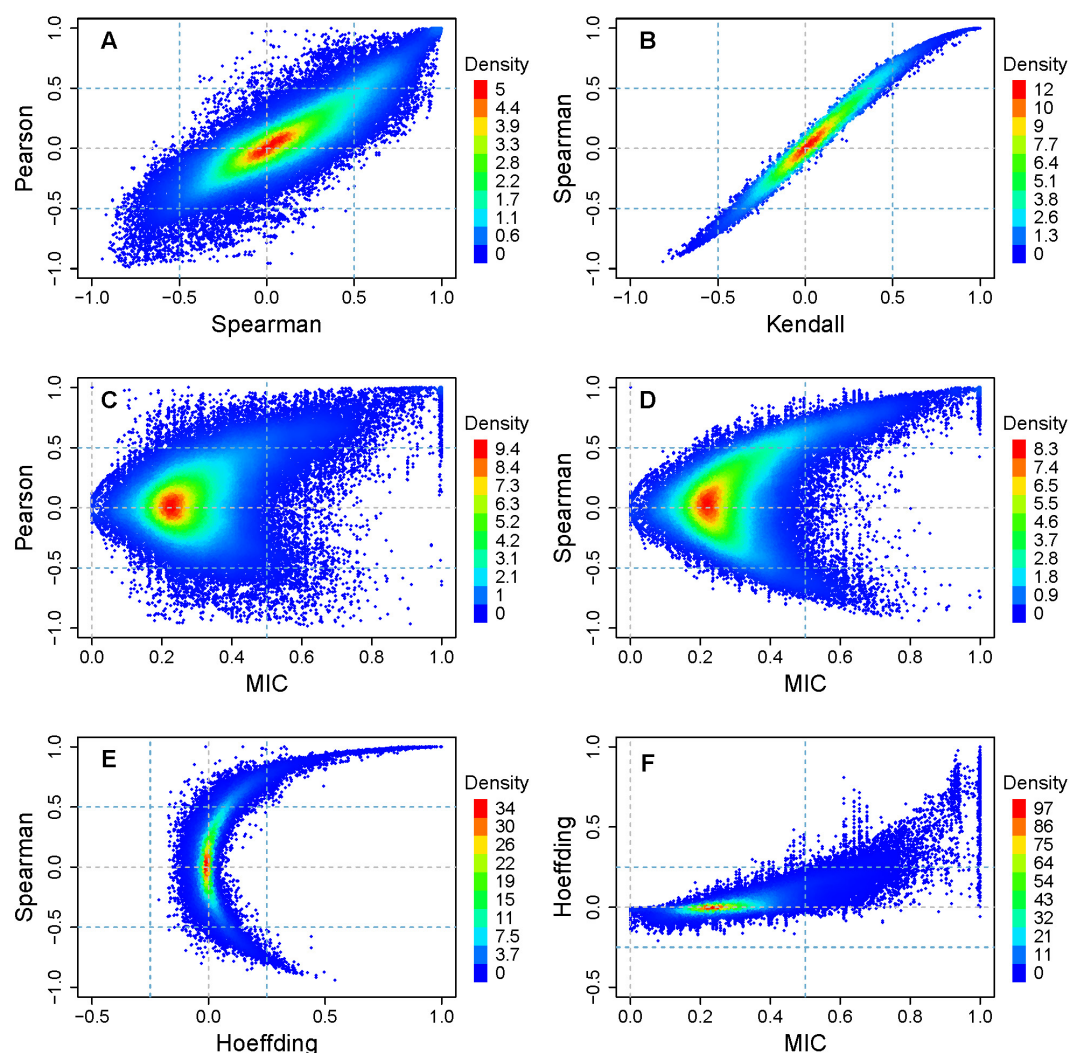


FIGURE S2 Correlation coefficients A) Pearson's r versus Spearman's r_s B) Spearman's r_s versus Kendall's τ C) Pearson's r versus Maximal information coefficient (MIC) D) Spearman's r_s versus MIC E) Spearman's r_s versus Hoeffding's D F) Hoeffding's D versus MIC for all pairwise relationships in the Global SDG Indicators Database (UN Statistics Division, 2019).

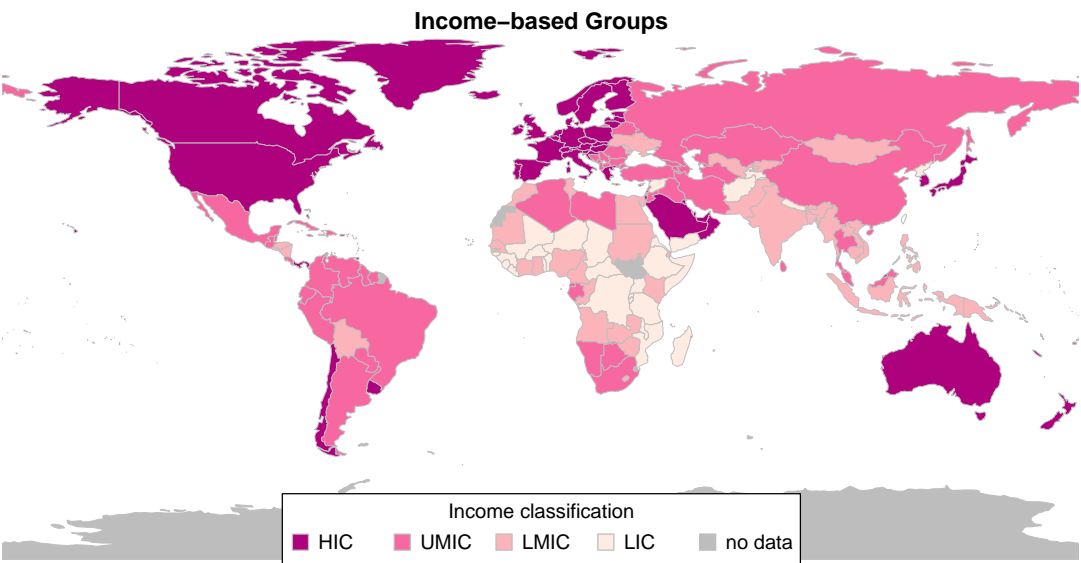


FIGURE S3 Global distribution of the four income groups – low-income countries (LIC), lower-middle-income countries (LMIC), upper-middle income-countries (UMIC), and high-income countries (HIC), in 2016. The grey colour depicts countries without sufficient data availability regarding the World Bank Atlas method (World Bank Group, 2018) or the Global SDG Indicators Database (UN Statistics Division, 2019).

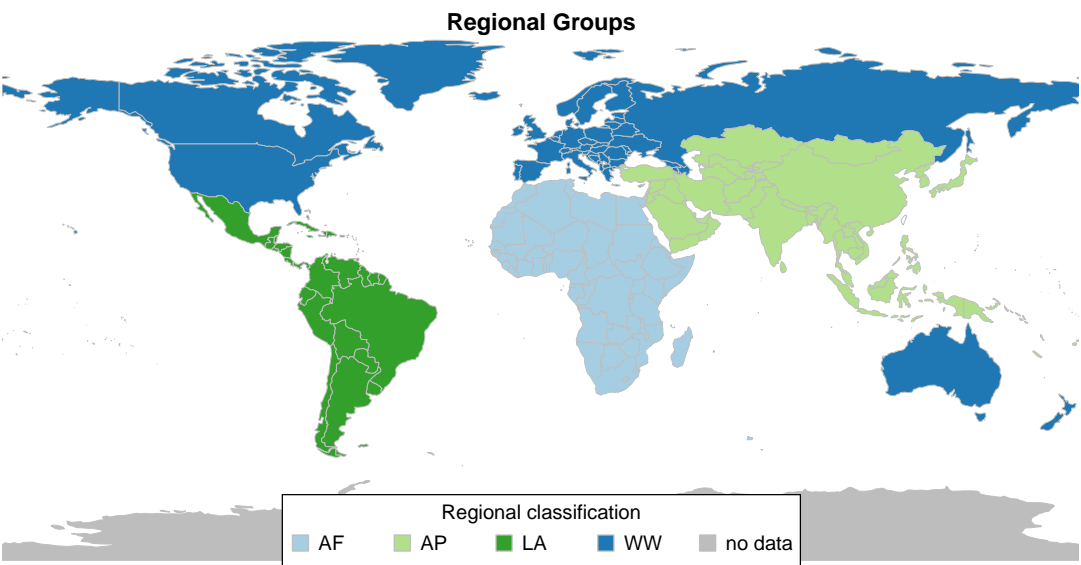


FIGURE S4 Global distribution of the four regional groups – Western World (WW), Latin America (LA), Asia-Pacific (AP) and Africa (AF). The grey colour depicts countries without sufficient data availability in the Global SDG Indicators Database (UN Statistics Division, 2019)

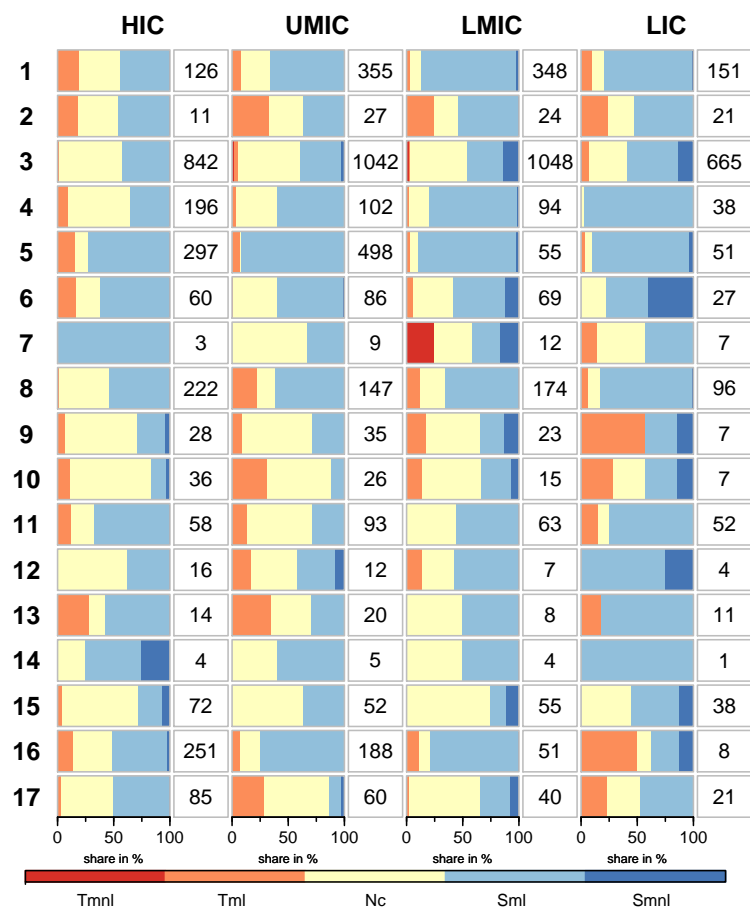


FIGURE S5 Detected interactions within Sustainable Development Goals (SDGs) among the four income groups – low-income countries (LIC), lower-middle-income countries (LMIC), upper-middle income-countries (UMIC), and high-income countries (HIC), in 2016. The colour bar represents the shares of monotone non-linear synergies (Smnl - dark blue), monotone linear synergies (Sml - blue), not-classifieds (Nc - yellow), non-monotone non-linear not-classifieds (Ncnmnl - light blue), monotone linear trade-offs (Tml - orange) and monotone non-linear trade-offs (Tmnl - dark red) for the entire Global SDG Indicators Database. The numbers in the boxes represents the number of data pairs used for the analysis.

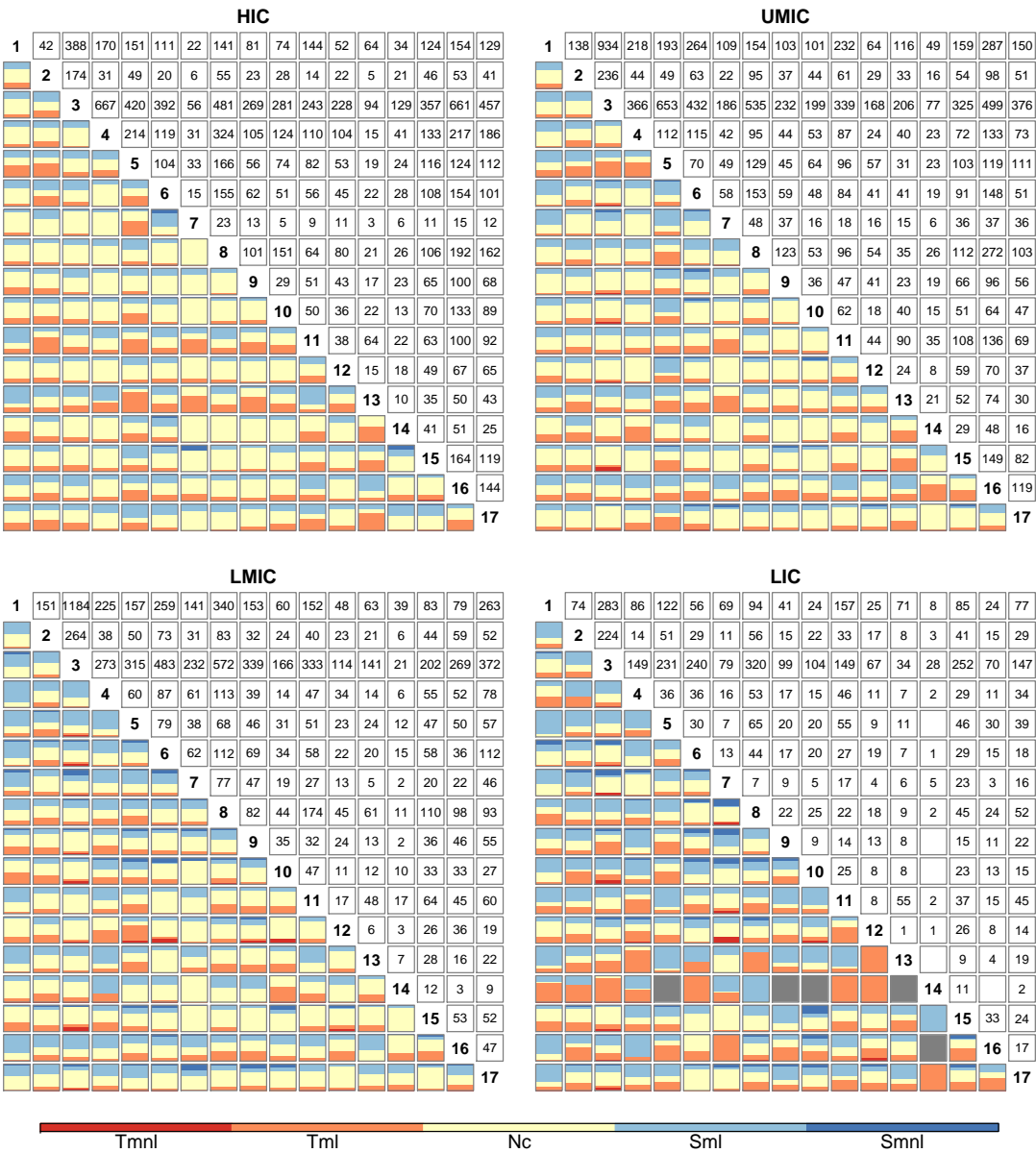


FIGURE S6 Detected interactions across Sustainable Development Goals (SDGs) among the four income groups – low-income countries (LIC), lower-middle-income countries (LMIC), upper-middle income-countries (UMIC), and high-income countries (HIC), in 2016. The colour bar represents the shares of monotone non-linear synergies (Smnl - dark blue), monotone linear synergies (Sml - blue), not-classifieds (Nc - yellow), non-monotone non-linear not-classifieds (Ncnmnl - light blue), monotone linear trade-offs (Tml - orange) and monotone non-linear trade-offs (Tmnl - dark red) for the entire Global SDG Indicators Database. The grey bar depicts insufficient data for the analysis. The numbers in the boxes represents the number of data pairs used for the analysis

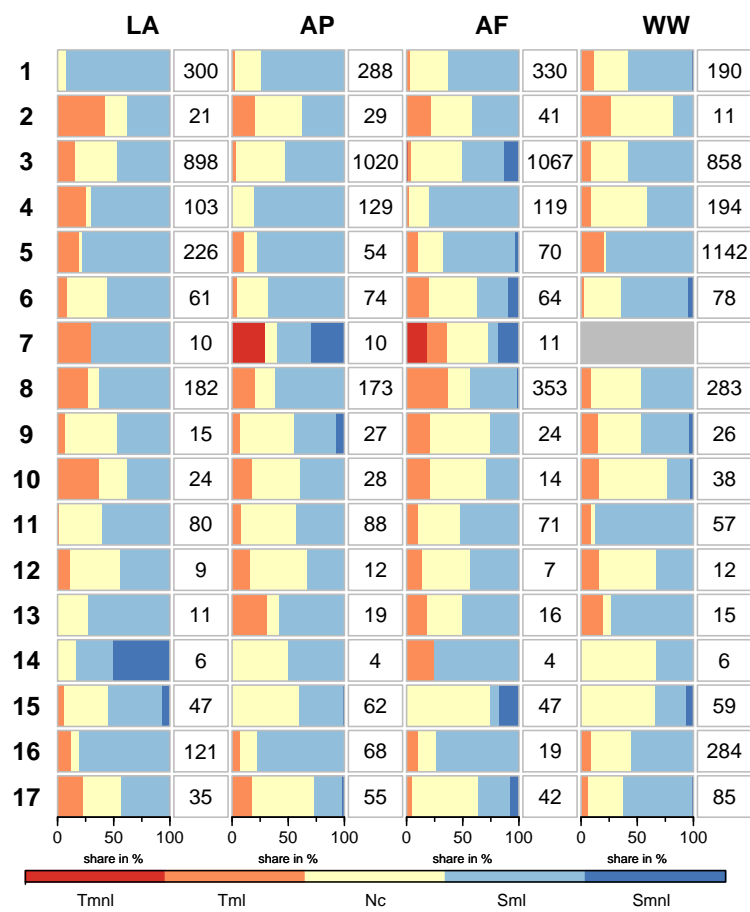


FIGURE S7 Detected interactions within Sustainable Development Goals (SDGs) among the four regional groups – Western World (WW), Latin America (LA), Asia-Pacific (AP) and Africa (AF). in 2016. The colour bar represents the shares of monotone non-linear synergies (Smnl - dark blue), monotone linear synergies (Sml - blue), not-classifieds (Nc - yellow), non-monotone non-linear not-classifieds (Ncnmnl - light blue), monotone linear trade-offs (Tml - orange) and monotone non-linear trade-offs (Tmnl - dark red) for the entire Global SDG Indicators Database. The grey bar depicts insufficient data for the analysis. The numbers in the boxes represents the number of data pairs used for the analysis.

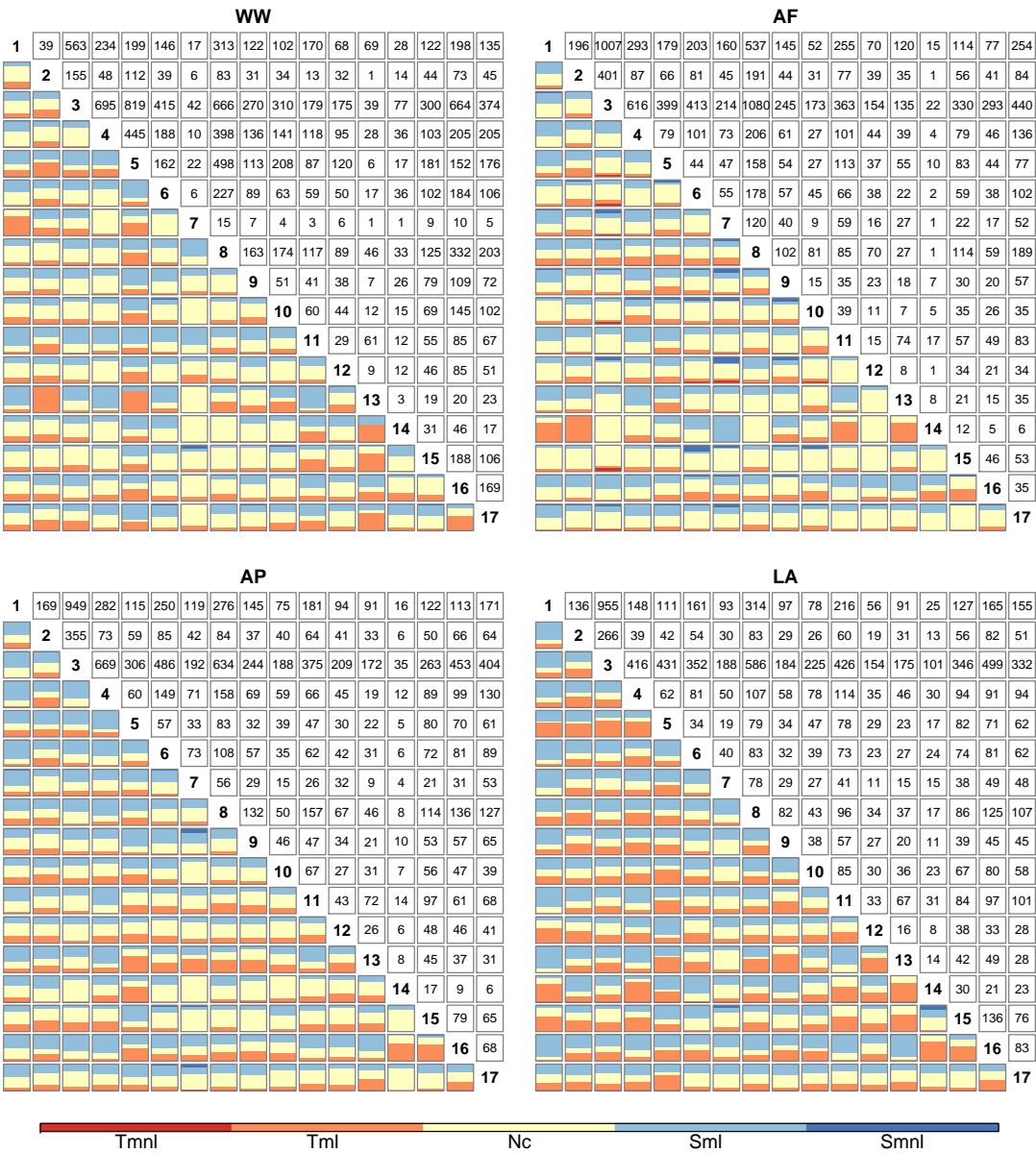


FIGURE S8 Detected interactions across Sustainable Development Goals (SDGs) among the four regional groups – Western World (WW), Latin America (LA), Asia-Pacific (AP) and Africa (AF). in 2016. The colour bar represents the shares of monotone non-linear synergies (Smnl - dark blue), monotone linear synergies (Sml - blue), not-classifieds (Nc - yellow), non-monotone non-linear not-classifieds (Ncnmnl - light blue), monotone linear trade-offs (Tml - orange) and monotone non-linear trade-offs (Tmnl - dark red) for the entire Global SDG Indicators Database. The numbers in the boxes represents the number of data pairs used for the analysis.

TABLE S3 List of official Sustainable Development Goals (SDGs) indicators and series codes provided by the Global SDG Indicators Database (UN Statistics Division, 2019) with the respective year/s, from which data was retrieved for the analysis, and the positive or negative assignment. For different countries the data availability varies across the years 2010 to 2019. For avoiding false detection of synergies and trade-offs, we assign a positive sign to indicators that require to increase and a negative sign to those indicators that need to decline for meeting the SDGs.

Indicator	Series Code	Data years	Sign
1.1.1	SI_POV_DAY1	2010, 2011, 2012, 2013, 2014, 2015	-1
1.1.1	SI_POV_EMP1	2010, 2011, 2012, 2013, 2014, 2015	-1
1.2.1	SI_POV_NAHC	2010, 2011, 2012, 2013, 2014, 2015	-1
1.3.1	SI_COV_MATNL	2016, 2017	1
1.3.1	SI_COV_POOR	2016, 2017, 2018	1
1.3.1	SI_COV_SOCAS	2010, 2011, 2012, 2013, 2014, 2015	1
1.3.1	SI_COV_SOCASBPQ	2010, 2011, 2012, 2013, 2014, 2015	1
1.3.1	SI_COV_SOCINS	2010, 2011, 2012, 2013, 2014, 2015	1
1.3.1	SI_COV_CHLD	2016, 2017, 2018	1
1.3.1	SI_COV_SOCINBPQ	2010, 2011, 2012, 2013, 2014, 2015	1
1.3.1	SI_COV_UEMP	2010, 2011, 2012, 2013, 2014, 2015	1
1.3.1	SI_COV_VULN	2016, 2017, 2018	1
1.3.1	SI_COV_WKINJRY	2010, 2011, 2012, 2015, 2015 & 2017, 2016	1
1.3.1	SI_COV_BENFTS	2016, 2017, 2018	1
1.3.1	SI_COV_DISAB	2014, 2016, 2017, 2018	1
1.3.1	SI_COV_LMKT	2010, 2011, 2012, 2013, 2014, 2015	1
1.3.1	SI_COV_LMKTPQ	2010, 2011, 2012, 2013, 2014, 2015	1
1.3.1	SI_COV_PENSN	2010, 2011, 2012, 2014, 2015, 2015 & 2017	1
1.4.1	SP_ACS_BSRVH2O	2013, 2015, 2016	1
1.4.1	SP_ACS_BSRVSAN	2012, 2013, 2015, 2016	1
1.5.2	VC_DSR_GDPLS	2010, 2011, 2012, 2013, 2014, 2014 & 2018	-1
1.5.1	VC_DSR_MISS	2010, 2011, 2012, 2013, 2014, 2015	-1
1.5.1	VC_DSR_AFFCT	2010, 2011, 2012, 2013, 2014, 2014 & 2018	-1
1.5.1	VC_DSR_MORT	2010, 2011, 2012, 2013, 2014, 2014 & 2018	-1
1.5.1	VC_DSR_MTMP	2010, 2011, 2012, 2013, 2014, 2014 & 2018	-1
1.5.1	VC_DSR_MTMN	2010, 2011, 2012, 2013, 2014, 2014 & 2018	-1
1.5.1	VC_DSR_DAFF	2010, 2011, 2012, 2013, 2014, 2014 & 2018	-1
1.5.1	VC_DSR_IJILN	2010, 2011, 2012, 2013, 2014, 2014 & 2018	-1
1.5.1	VC_DSR_PDAN	2010, 2011, 2012, 2013, 2014, 2014 & 2018	-1
1.5.1	VC_DSR_PDYN	2010, 2011, 2012, 2013, 2014, 2015	-1
1.5.1	VC_DSR_PDLN	2015, 2016, 2017, 2018	-1
1.5.3	SG_DSR_LGRGSR	2016, 2017, 2018	1
1.5.4	SG_DSR_SILS	2015, 2016, 2017, 2018	1
1.5.4	SG_DSR_SILN	2015, 2016, 2017, 2018	1
1.5.4	SG_GOV_LOGV	2015, 2016, 2017, 2018	1
1.5.2	VC_DSR_LSGP	2010, 2011, 2012, 2013, 2014, 2014 & 2018	-1
1.5.2	VC_DSR_AGLN	2010, 2011, 2012, 2013, 2014, 2014 & 2018	-1
1.5.2	VC_DSR_HOLN	2010, 2011, 2012, 2013, 2014, 2014 & 2018	-1

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Indicator	Series Code	Data years	Sign
1.5.2	VC_DSR_CILN	2010, 2011, 2012, 2013, 2014, 2014 & 2018	-1
1.5.2	VC_DSR_CHLN	2010, 2011, 2012, 2013, 2014, 2014 & 2018	-1
1.5.2	VC_DSR_DDPA	2010, 2011, 2012, 2013, 2014, 2014 & 2018	-1
1.a.2	SD_XPD_ESED	2010, 2011, 2012, 2013, 2014, 2015	1
2.1.1	SN_ITK_DEFC	2010, 2011, 2016	-1
2.1.2	AG_PRD_FIESSI	2015, 2016	-1
2.1.2	AG_PRD_FIESSIN	2015, 2016	-1
2.1.1	SN_ITK_DEFCN	2010, 2011, 2012, 2016	-1
2.2.1	SH_STA_STUNT	2010, 2011, 2012, 2013, 2014, 2014 & 2018	-1
2.2.1	SH_STA_STUNTN	2010, 2011, 2012, 2013, 2014, 2014 & 2018	-1
2.2.2	SH_STA_WASTE	2010, 2011, 2012, 2013, 2014, 2014 & 2018	-1
2.2.2	SH_STA_WASTEN	2010, 2011, 2012, 2013, 2014, 2014 & 2018	-1
2.2.2	SH_STA_OVRWGT	2010, 2011, 2012, 2013, 2014, 2014 & 2018	-1
2.3.1	PD_AGR_SSFP	2012, 2013, 2014, 2015, 2016	1
2.3.2	SI_AGR_SSFP	2010, 2011, 2012, 2013, 2014, 2015	1
2.5.1	ER_GRF_ANIMRCNT	2018, 2019	1
2.5.1	ER_GRF_PLNTSTOR	2016	1
2.5.2	ER_RSK_LBREDS	2016, 2017, 2018	-1
2.a.1	AG_PRD_ORTIND	2010, 2011, 2012, 2013, 2014, 2015	1
2.a.2	DC_TOF_AGRL	2010, 2013, 2015 & 2017, 2016, 2017	1
2.a.1	AG_PRD_AGVAS	2010, 2011, 2012, 2013, 2014, 2015	1
2.a.1	AG_XPD_AGSGB	2010, 2011, 2012, 2013, 2014, 2015	1
2.c.1	AG_FPA_COMM	2016, 2017	-1
2.c.1	AG_FPA_CFPI	2016	1
3.1.2	SH_STA_BRTC	2010, 2011, 2012, 2013, 2014, 2014 & 2018	1
3.1.1	SH_STA_MMR	2015	-1
3.2.1	SH_DYN_IMRTN	2016	-1
3.2.1	SH_DYN_MORT	2016	-1
3.2.2	SH_DYN_NMRTN	2016	-1
3.2.1	SH_DYN_IMRT	2016	-1
3.2.2	SH_DYN_NMRT	2016	-1
3.2.1	SH_DYN_MORTN	2016	-1
3.3.1	SH_HIV_INCD	2015, 2016, 2017	-1
3.3.3	SH_STA_MALR	2016	-1
3.3.5	SH_TRP_INTVN	2016	-1
3.3.2	SH_TBS_INCID	2016	-1
3.3.4	SH_HAP_HBSAG	2015	-1

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Indicator	Series Code	Data years	Sign
3.4.1	SH_DTH_NCOM	2016	-1
3.4.2	SH_STA_SCIDE	2016	-1
3.4.2	SH_STA_SCIDEN	2016	-1
3.4.1	SH_DTH_RNCOM	2016	-1
3.5.2	SH_ALC_CONSPT	2016	-1
3.6.1	SH_STA_TRAF	2013	-1
3.7.1	SH_FPL_MTMM	2010, 2011, 2012, 2013, 2014, 2014 & 2018	1
3.7.2	SP_DYN_ADKL	2010, 2011, 2012, 2013, 2014, 2015	-1
3.8.2	SH_XPD_EARN25	2010, 2011, 2012, 2013, 2014, 2015	-1
3.8.2	SH_XPD_EARN10	2010, 2011, 2012, 2013, 2014, 2015	-1
3.8.1	SH_ACS_UNHC	2015 & 2017	1
3.9.1	SH_HAP_ASMORT	2016	-1
3.9.1	SH_STA_AIRP	2016	-1
3.9.1	SH_STA_ASAIRP	2016	-1
3.9.1	SH_AAP_MORT	2016	-1
3.9.3	SH_STA_POISN	2016	-1
3.9.2	SH_STA_WASH	2016	-1
3.9.1	SH_AAP_ASMORT	2016	-1
3.9.1	SH_HAP_MORT	2016	-1
3.a.1	SH_PRV_SMOK	2016	-1
3.b.2	DC_TOF_HLTHNT	2010, 2013, 2014, 2015 & 2017, 2016	1
3.b.2	DC_TOF_HLTHL	2010, 2013, 2014, 2015 & 2017, 2016	1
3.b.1	SH_ACS_DTP3	2016	1
3.b.1	SH_ACS_MCV2	2016, 2017	1
3.b.1	SH_ACS_PCV3	2016, 2017	1
3.c.1	SH_MED_HEAWOR	2010, 2011, 2012, 2013, 2014, 2014 & 2018	1
3.d.1	SH_IHR_CAPS	2010, 2014, 2014 & 2018, 2015, 2015 & 2017, 2016	1
4.1.1	SE_MAT_PROF	2010, 2011, 2012, 2013, 2014, 2015	1
4.1.1	SE_REA_PROF	2010, 2011, 2012, 2013, 2014, 2015	1
4.2.2	SE_PRE_PARTN	2010, 2011, 2012, 2013, 2014, 2015	1
4.2.1	SE_DEV_ONTRK	2010, 2011, 2012, 2013, 2014, 2015	1
4.3.1	SE_ADT_EDUCTRN	2011, 2012, 2015, 2016	1
4.4.1	SE_ADT_ACTS	2014, 2015, 2015 & 2017, 2016, 2017, 2018	1
4.5.1	SE_PRE_GPIPARTN	2010, 2011, 2012, 2013, 2014, 2015	1
4.5.1	SE_GPI_FUNPROF	2012, 2013, 2015	1
4.5.1	SE_GPI_MATACH	2010, 2011, 2012, 2013, 2014, 2015	1
4.5.1	SE_GPI_REAACH	2010, 2011, 2012, 2013, 2014, 2015	1

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Indicator	Series Code	Data years	Sign
4.5.1	SE_GPI_TRATEA	2010, 2011, 2012, 2013, 2014, 2015	1
4.5.1	SE_SEP_FUNPROF	2012, 2013, 2015	1
4.5.1	SE_SEP_MATACH	2011, 2012, 2013, 2014, 2015, 2016	1
4.5.1	SE_SEP_REAACH	2011, 2012, 2013, 2014, 2015, 2016	1
4.5.1	SE_URP_MATACH	2011, 2012, 2013, 2014, 2015, 2016	1
4.5.1	SE_URP_REAACH	2011, 2012, 2013, 2014, 2015, 2016	1
4.5.1	SE_GPI_PART	2011, 2012, 2015, 2016	1
4.5.1	SE_GPI_ISTS	2014, 2015, 2016, 2018	1
4.5.1	SE_NAP_ACHIRE	2012, 2013, 2015, 2016	1
4.5.1	SE_NAP_ACHIMA	2012, 2013, 2015, 2015 & 2017	1
4.5.1	SE_LGP_ACHIRE	2011, 2012, 2013, 2014, 2015, 2016	1
4.5.1	SE_LGP_ACHIMA	2011, 2012, 2013, 2014, 2015, 2015 & 2017	1
4.5.1	SE_IMP_FPOF	2012, 2015	1
4.6.1	SE_ADT_FUNS	2011, 2012, 2013, 2015, 2016, 2017	1
4.a.1	SE_ACC_COMP	2010, 2011, 2012, 2015, 2016, 2017	1
4.a.1	SE_ACC_DWAT	2015, 2016, 2017, 2018	1
4.a.1	SE_ACC_ELEC	2010, 2011, 2012, 2013, 2015, 2016	1
4.a.1	SE_ACC_HNWA	2015, 2016, 2017, 2018	1
4.a.1	SE_ACC_INTN	2010, 2011, 2012, 2015, 2016, 2017	1
4.a.1	SE_ACC_SANI	2015, 2016, 2017, 2018	1
4.a.1	SE_INF_DSBL	2015, 2016, 2017, 2018	1
4.b.1	DC_TOF_SCHIPSL	2010, 2012, 2013, 2015, 2015 & 2017, 2016	1
4.c.1	SE_TRA_GRDL	2010, 2011, 2012, 2013, 2014, 2015	1
5.1.1	SG_LGL_GENEQLFP	2018	1
5.1.1	SG_LGL_GENEQVAW	2018	1
5.1.1	SG_LGL_GENEQEMP	2018	1
5.1.1	SG_LGL_GENEQMAR	2018	1
5.2.1	VC_VAW_MARR	2010, 2011, 2012, 2013, 2014, 2015	-1
5.3.1	SP_DYN_MRBF18	2010, 2011, 2012, 2013, 2014, 2015	-1
5.3.2	SH_STA_FGMS	2010, 2011, 2012, 2013, 2014, 2015	-1
5.3.1	SP_DYN_MRBF15	2010, 2011, 2012, 2013, 2014, 2015	-1
5.4.1	SL_DOM_TSPDCW	2010, 2011, 2012, 2013, 2014, 2015	-1
5.4.1	SL_DOM_TSPDDC	2010, 2011, 2012, 2013, 2014, 2015	-1
5.4.1	SL_DOM_TSPD	2010, 2011, 2012, 2013, 2014, 2015	-1
5.5.2	IC_GEN_MGTL	2010, 2011, 2012, 2013, 2014, 2015	1
5.5.2	IC_GEN_MGTN	2010, 2011, 2012, 2013, 2014, 2015	1
5.5.1	SG_GEN_PARLN	2016, 2017	1

TABLE S3 List of official Sustainable Development Goals (SDGs) indicators and series codes provided by the Global SDG Indicators Database (UN Statistics Division, 2019) with the respective year/s, from which data was retrieved for the analysis, and the positive or negative assignment. For different countries the data availability varies across the years 2010 to 2019. For avoiding false detection of synergies and trade-offs, we assign a positive sign to indicators that require to increase and a negative sign to those indicators that need to decline for meeting the SDGs.

Indicator	Series Code	Data years	Sign
5.5.1	SG_GEN_PARLNT	2016, 2017	1
5.5.1	SG_GEN_PARL	2016, 2017	1
5.5.1	SG_GEN_LOCGELS	2016, 2017, 2018, 2019	1
5.6.1	SH_FPL_INFM	2010, 2011, 2012, 2013, 2014, 2015	1
5.6.1	SH_FPL_INFMSR	2010, 2011, 2012, 2013, 2014, 2015	1
5.6.1	SH_FPL_INFMCU	2010, 2011, 2012, 2013, 2014, 2015	1
5.6.1	SH_FPL_INFMRH	2010, 2011, 2012, 2013, 2014, 2015	1
5.b.1	IT_MOB_OWEN	2014, 2015, 2015 & 2017, 2016, 2017	1
5.c.1	SG_GEN_EQPWN	2018	1
6.1.1	SH_H2O_SAFE	2016	1
6.2.1	SH_SAN_HNDWSH	2010, 2014, 2015, 2016	1
6.2.1	SH_SAN_SAFE	2016	1
6.2.1	SH_SAN_DEFECT	2012, 2013, 2014, 2015, 2016	-1
6.3.2	EN_H2O_OPAMBQ	2017	1
6.3.2	EN_H2O_RVAMBQ	2017	1
6.3.2	EN_H2O_GRAMBQ	2017	1
6.3.2	EN_H2O_WBAMBQ	2017	1
6.3.1	EN_WWT_WWDS	2018	1
6.4.2	ER_H2O_STRESS	2010, 2015	-1
6.4.1	ER_H2O_WUEYST	2010, 2015	1
6.5.2	EG_TBA_H2CO	2017, 2018	1
6.5.2	EG_TBA_H2COAQ	2017, 2018	1
6.5.2	EG_TBA_H2CORL	2017, 2018	1
6.5.1	ER_H2O_IWRMD	2018	1
6.6.1	EN_WBE_PMPR	2016	1
6.6.1	EN_WBE_PMNR	2016	1
6.6.1	EN_WBE_PMPP	2016	1
6.6.1	EN_WBE_PMPN	2016	1
6.6.1	EN_WBE_NDETOT	2017	1
6.6.1	EN_WBE_NDOPW	2017	1
6.6.1	EN_WBE_NDQLGRW	2017	1
6.6.1	EN_WBE_NDQLOPW	2017	1
6.6.1	EN_WBE_NDQLRVR	2017	1
6.6.1	EN_WBE_NDQLTOT	2017	1
6.6.1	EN_WBE_NDQTGRW	2017	1
6.6.1	EN_WBE_NDQTOPW	2017	1
6.6.1	EN_WBE_NDQTRVR	2017	1

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Indicator	Series Code	Data years	Sign
6.6.1	EN_WBE_NDQTTOT	2017	1
6.6.1	EN_WBE_NDRV	2017	1
6.6.1	EN_WBE_NDWTL	2017	1
6.a.1	DC_TOF_WASHL	2010, 2011, 2013, 2014, 2015 & 2017, 2016	1
6.b.1	ER_H2O_RURP	2012, 2014, 2017, 2019	1
6.b.1	ER_H2O_PRDU	2012, 2014, 2017, 2019	1
6.b.1	ER_WAT_PART	2017, 2019	1
6.b.1	ER_WAT_PRDU	2017, 2019	1
7.1.2	EG_EGY_CLEAN	2010, 2016	1
7.1.1	EG_ELC_ACCS	2016	1
7.2.1	EG_FEC_RNEW	2016	1
7.3.1	EG_EGY_PRIM	2016	-1
7.a.1	EG_IFF_RANDN	2010, 2011, 2012, 2014, 2015, 2016	1
8.1.1	NY_GDP_PCAP	2016	1
8.2.1	SL_EMP_PCAP	2016	1
8.3.1	SL_ISV_IFRM	2010, 2011, 2012, 2013, 2014, 2015	-1
8.4.2	EN_MAT_DOMCMPT	2016	-1
8.4.2	EN_MAT_DOMCMPG	2016	-1
8.4.2	EN_MAT_DOMCMPC	2016	-1
8.5.2	SL_TLF_UEM	2010, 2011, 2012, 2013, 2014, 2015	-1
8.5.1	SL_EMP_AEARN	2013, 2014, 2015, 2015 & 2017, 2016, 2017	1
8.5.2	SL_TLF_UEMDIS	2010, 2012, 2013, 2014, 2015, 2016	-1
8.6.1	SL_TLF_NEET	2010, 2011, 2012, 2013, 2014, 2015	-1
8.7.1	SL_TLF_CHLDEC	2010, 2011, 2012, 2013, 2014, 2015	-1
8.7.1	SL_TLF_CHLDEA	2010, 2011, 2012, 2013, 2014, 2015	-1
8.8.1	SL_EMP_FTLINJUR	2010, 2011, 2012, 2013, 2014, 2015	-1
8.8.1	SL_EMP_INJUR	2010, 2011, 2012, 2013, 2014, 2015	-1
8.10.1	FB_ATM_TOTL	2012, 2013, 2014, 2015, 2016, 2017	1
8.10.2	FB_BNK_ACCSS	2011, 2014, 2017	1
8.10.1	FB_CBK_BRCH	2012, 2013, 2014, 2015, 2016	1
8.a.1	DC_TOF_TRDCMDL	2016	1
8.a.1	DC_TOF_TRDDBMDL	2016	1
8.a.1	DC_TOF_TRDDBML	2015, 2016	1
8.a.1	DC_TOF_TRDCML	2016	1
9.1.2	IS_RDP_FRGVOL	2017	1
9.1.2	IS_RDP_PFVOL	2017	1
9.2.1	NV_IND_MANFPC	2016	1

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Indicator	Series Code	Data years	Sign
9.2.2	SL_TLF_MANF	2010, 2011, 2012, 2013, 2014, 2015	1
9.2.1	NV_IND_MANF	2016	1
9.3.1	NV_IND_SSI	2011, 2012, 2013, 2014, 2015, 2016	1
9.3.2	FC_ACC_SSID	2010, 2011, 2012, 2013, 2014, 2015	1
9.4.1	EN_ATM_CO2	2016	-1
9.4.1	EN_ATM_CO2MVA	2016	-1
9.4.1	EN_ATM_CO2GDP	2016	-1
9.5.2	GB_POP_SCIERD	2010, 2011, 2012, 2013, 2014, 2015	1
9.5.1	GB_XPD_RSDV	2010, 2011, 2012, 2013, 2014, 2015	1
9.a.1	DC_TOF_INFRA	2010, 2013, 2015 & 2017, 2016	1
9.b.1	NV_IND_TECH	2016	1
9.c.1	IT_MOB_NTWK	2014, 2015, 2016	1
10.1.1	SI_HEI_TOTL	2012, 2013, 2014, 2015, 2016, 2017	1
10.1.1	SI_HEI_BTN40	2012, 2013, 2014, 2015, 2016, 2017	1
10.4.1	SL_EMP_GTOTL	2010, 2011, 2012, 2013, 2014, 2015	1
10.5.1	FI_FSI_FSNL	2014, 2015, 2016	1
10.5.1	FI_FSI_FSERA	2014, 2015, 2016	1
10.5.1	FI_FSI_FSKA	2014, 2015, 2016, 2017, 2018	1
10.5.1	FI_FSI_FSKNL	2014, 2015, 2016	1
10.5.1	FI_FSI_FSKRTC	2014, 2015, 2016	1
10.5.1	FI_FSI_FSL	2013, 2014, 2015, 2016, 2017	1
10.5.1	FI_FSI_FSSNO	2013, 2014, 2015, 2016, 2017, 2018	-1
10.6.1	SG_INT_MBRDEV	2016	1
10.6.1	SG_INT_VRTDEV	2016	1
10.7.2	SG_CPA_MIGR	2019	1
10.a.1	TM_TRF_ZERO	2010, 2015 & 2017, 2016, 2017	1
10.b.1	DC_TRF_TOTDL	2015, 2016	1
10.b.1	DC_TRF_TOTL	2010, 2013, 2016	1
10.c.1	SI_RMT_COST	2011, 2015 & 2017, 2017	-1
11.1.1	EN_LND_SLUM	2014, 2016	-1
11.5.2	VC_DSR_GDPLS	2010, 2011, 2012, 2013, 2014, 2014 & 2018	-1
11.5.1	VC_DSR_MISS	2010, 2011, 2012, 2013, 2014, 2015	-1
11.5.1	VC_DSR_AFFCT	2010, 2011, 2012, 2013, 2014, 2014 & 2018	-1
11.5.1	VC_DSR_MORT	2010, 2011, 2012, 2013, 2014, 2014 & 2018	-1
11.5.1	VC_DSR_MTMP	2010, 2011, 2012, 2013, 2014, 2014 & 2018	-1
11.5.1	VC_DSR_MTMN	2010, 2011, 2012, 2013, 2014, 2014 & 2018	-1
11.5.1	VC_DSR_DAFF	2010, 2011, 2012, 2013, 2014, 2014 & 2018	-1

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Indicator	Series Code	Data years	Sign
11.5.1	VC_DSR_IJILN	2010, 2011, 2012, 2013, 2014, 2014 & 2018	-1
11.5.1	VC_DSR_PDAN	2010, 2011, 2012, 2013, 2014, 2014 & 2018	-1
11.5.1	VC_DSR_PDYN	2010, 2011, 2012, 2013, 2014, 2015	-1
11.5.1	VC_DSR_PDLN	2015, 2016, 2017, 2018	-1
11.5.2	VC_DSR_LSGP	2010, 2011, 2012, 2013, 2014, 2014 & 2018	-1
11.5.2	VC_DSR_AGLN	2010, 2011, 2012, 2013, 2014, 2014 & 2018	-1
11.5.2	VC_DSR_HOLN	2010, 2011, 2012, 2013, 2014, 2014 & 2018	-1
11.5.2	VC_DSR_CILN	2010, 2011, 2012, 2013, 2014, 2014 & 2018	-1
11.5.2	VC_DSR_CHLN	2010, 2011, 2012, 2013, 2014, 2014 & 2018	-1
11.5.2	VC_DSR_C DAN	2010, 2011, 2012, 2013, 2014, 2014 & 2018	-1
11.5.2	VC_DSR_HFDN	2010, 2011, 2012, 2013, 2014, 2014 & 2018	-1
11.5.2	VC_DSR_EFDN	2010, 2011, 2012, 2013, 2014, 2014 & 2018	-1
11.5.2	VC_DSR_CDYN	2010, 2011, 2012, 2013, 2014, 2014 & 2018	-1
11.5.2	VC_DSR_BSDN	2010, 2011, 2012, 2013, 2014, 2014 & 2018	-1
11.5.2	VC_DSR_ESDN	2010, 2011, 2012, 2013, 2014, 2014 & 2018	-1
11.5.2	VC_DSR_HSDN	2010, 2011, 2012, 2013, 2014, 2014 & 2018	-1
11.5.2	VC_DSR_OBDN	2010, 2011, 2012, 2013, 2014, 2014 & 2018	-1
11.5.2	VC_DSR_DDPA	2010, 2011, 2012, 2013, 2014, 2014 & 2018	-1
11.6.2	EN_ATM_PM25	2016	-1
11.6.1	EN_REF_WASCOL	2010, 2011, 2012, 2013, 2014, 2015	1
11.b.1	SG_DSR_LGRGSR	2016, 2017, 2018	1
11.b.2	SG_DSR_SILS	2015, 2016, 2017, 2018	1
11.b.2	SG_DSR_SILN	2015, 2016, 2017, 2018	1
11.b.2	SG_GOV_LOGV	2015, 2016, 2017, 2018	1
12.1.1	SG_SCP_CNTRY	2017	1
12.1.1	SG_SCP_CORMEC	2017	1
12.1.1	SG_SCP_MACPOL	2017	1
12.1.1	SG_SCP_POLINS	2017	1
12.2.2	EN_MAT_DOMCMPT	2016	-1
12.2.2	EN_MAT_DOMCMPG	2016	-1
12.2.2	EN_MAT_DOMCMPC	2016	-1
12.4.1	SG_HAZ_CMRMNTNL	2015	1
12.4.1	SG_HAZ_CMRROTDAM	2015	1
12.4.1	SG_HAZ_CMRBASEL	2015	1
12.4.1	SG_HAZ_CMRSTHOLM	2015	1
12.c.1	ER_FFS_PRTSST	2013, 2015	1
12.c.1	ER_FFS_PRTSPC	2013, 2015	1

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Indicator	Series Code	Data years	Sign
12.c.1	ER_FFS_PRTSPR	2013, 2015	1
13.1.1	VC_DSR_MISS	2010, 2011, 2012, 2013, 2014, 2015	-1
13.1.1	VC_DSR_AFFCT	2010, 2011, 2012, 2013, 2014, 2014 & 2018	-1
13.1.1	VC_DSR_MORT	2010, 2011, 2012, 2013, 2014, 2014 & 2018	-1
13.1.1	VC_DSR_MTMP	2010, 2011, 2012, 2013, 2014, 2014 & 2018	-1
13.1.1	VC_DSR_MTMN	2010, 2011, 2012, 2013, 2014, 2014 & 2018	-1
13.1.1	VC_DSR_DAFF	2010, 2011, 2012, 2013, 2014, 2014 & 2018	-1
13.1.1	VC_DSR_IJILN	2010, 2011, 2012, 2013, 2014, 2014 & 2018	-1
13.1.1	VC_DSR_PDAN	2010, 2011, 2012, 2013, 2014, 2014 & 2018	-1
13.1.1	VC_DSR_PDYN	2010, 2011, 2012, 2013, 2014, 2015	-1
13.1.1	VC_DSR_PDLN	2015, 2016, 2017, 2018	-1
13.1.2	SG_DSR_LGRGSR	2016, 2017, 2018	1
13.1.3	SG_DSR_SILS	2015, 2016, 2017, 2018	1
13.1.3	SG_DSR_SILN	2015, 2016, 2017, 2018	1
13.1.3	SG_GOV_LOGV	2015, 2016, 2017, 2018	1
14.5.1	ER_MRN_MARINT	2017, 2018	1
14.5.1	ER_MRN_MARIN	2018	1
14.5.1	ER_MRN_MPA	2016	1
14.6.1	ER_REG_UNFCIM	2018	1
14.a.1	ER_RDE_OSEX	2010, 2011, 2012, 2013	1
14.b.1	ER_REG_SSFRAR	2018	1
15.1.1	AG_LND_TOTL	2015	1
15.1.1	AG_LND_FRSTN	2015	1
15.1.1	AG_LND_FRST	2015	1
15.1.2	ER_PTD_FRWRT	2016	1
15.1.2	ER_PTD_TERRS	2016	1
15.2.1	AG_LND_FRSTBIOPHA	2010, 2015	1
15.2.1	AG_LND_FRSTCERT	2016	1
15.2.1	AG_LND_FRSTCHG	2015	1
15.2.1	AG_LND_FRSTMGT	2010	1
15.2.1	AG_LND_FRSTPRCT	2010, 2015	1
15.3.1	AG_LND_DGRD	2015	-1
15.4.2	ER_MTN_GRNCVI	2017	1
15.4.2	ER_MTN_TOTL	2017	1
15.4.2	ER_MTN_GRNCOV	2017	1
15.4.1	ER_PTD_MOTN	2016	1
15.5.1	ER_RSK_LSTI	2016	-1

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Indicator	Series Code	Data years	Sign
15.6.1	ER_CBD_SMTA	2012, 2013, 2014, 2015, 2016, 2017	1
15.6.1	ER_CBD_NAGOYA	2012, 2013, 2014, 2015, 2016, 2017	1
15.6.1	ER_CBD_ABSCLRHS	2012, 2013, 2014, 2015, 2016, 2017	1
15.6.1	ER_CBD_ORSPGRFA	2016	1
15.6.1	ER_CBD_PTYGRFA	2016	1
15.a.1	DC_ODA_BDVDL	2016	1
15.a.1	DC_ODA_BDVL	2010, 2013, 2015 & 2017, 2016, 2017	1
15.b.1	DC_ODA_BDVDL	2016	1
15.b.1	DC_ODA_BDVL	2010, 2013, 2015 & 2017, 2016, 2017	1
16.1.1	VC_IHR_PSRC	2010, 2011, 2012, 2013, 2014, 2015	-1
16.1.1	VC_IHR_PSRCN	2010, 2011, 2012, 2013, 2014, 2015	-1
16.1.3	VC_VOV_PHYL	2010, 2011, 2012, 2014, 2015, 2016	-1
16.1.3	VC_VOV_ROBB	2010, 2011, 2012, 2013, 2014, 2015	-1
16.1.3	VC_VOV_SEXL	2010, 2011, 2012, 2013, 2014, 2015	-1
16.1.4	VC_SNS_WALN	2013, 2014, 2015, 2016	1
16.2.3	VC_VAW_SXVLN	2011, 2012, 2013, 2014, 2015, 2016	-1
16.2.1	VC_VAW_PHYPVV	2010, 2011, 2012, 2013, 2014, 2015	-1
16.2.2	VC_HTF_DETFL	2010, 2011, 2012, 2013, 2014, 2015	-1
16.2.2	VC_HTF_DETVOV	2011, 2012, 2013, 2014, 2015, 2015 & 2017	-1
16.2.2	VC_HTF_DETVOG	2010, 2011, 2012, 2013, 2014, 2015	-1
16.2.2	VC_HTF_DETVSX	2010, 2011, 2012, 2013, 2014, 2015	-1
16.2.2	VC_HTF_DET	2010, 2011, 2012, 2013, 2014, 2015	-1
16.3.2	VC_PRR_UNSEC	2017	-1
16.3.1	VC_PRR_PHYV	2013, 2014, 2015, 2016, 2017	1
16.3.1	VC_PRR_SEXV	2010, 2011, 2013, 2014, 2015, 2016	1
16.3.1	VC_PRR_ROBB	2010, 2011, 2012, 2013, 2014, 2015	1
16.5.2	IC_FRM_BRIB	2010, 2011, 2012, 2013, 2014, 2015	1
16.5.1	IU_COR_BRIB	2010, 2011, 2012, 2013, 2014, 2015	-1
16.6.1	GF_XPD_GBPC	2010, 2011, 2012, 2013, 2014, 2015	-1
16.8.1	SG_INT_MBRDEV	2016	1
16.8.1	SG_INT_VRTDEV	2016	1
16.9.1	SG_REG_BRTH	2010, 2011, 2012, 2013, 2014, 2015	1
16.10.2	SG_INF_ACCSS	2019	-1
16.a.1	SG_NHR_IMPLN	2010, 2015, 2016, 2017, 2018	1
16.a.1	SG_NHR_NOSTUSN	2016	-1
16.a.1	SG_NHR_INTEXSTN	2010, 2016, 2017, 2018	-1
16.a.1	SG_NHR_NOAPPLN	2010, 2015, 2016	-1

TABLE S3 List of official Sustainable Development Goals (SDGs) indicators and series codes provided by the Global SDG Indicators Database (UN Statistics Division, 2019) with the respective year/s, from which data was retrieved for the analysis, and the positive or negative assignment. For different countries the data availability varies across the years 2010 to 2019. For avoiding false detection of synergies and trade-offs, we assign a positive sign to indicators that require to increase and a negative sign to those indicators that need to decline for meeting the SDGs.

Indicator	Series Code	Data years	Sign
17.1.1	GR_G14_GDP	2010, 2011, 2012, 2013, 2014, 2015	1
17.1.2	GC_GOB_TAXD	2010, 2013, 2014, 2015, 2016, 2017	1
17.2.1	DC_ODA_SIDSG	2016	1
17.2.1	DC_ODA_LDCG	2016	1
17.2.1	DC_ODA_LLDC	2016	1
17.2.1	DC_ODA_SIDS	2016	1
17.2.1	DC_ODA_LDCS	2016	1
17.2.1	DC_ODA_LLDCG	2016	1
17.2.1	DC_ODA_TOTG	2016	1
17.2.1	DC_ODA_TOTL	2016	1
17.2.1	DC_ODA_TOTLGE	2018	1
17.2.1	DC_ODA_TOTGGE	2018	1
17.3.2	BX_TRF_PWKR	2012, 2013, 2014, 2015, 2016, 2017	1
17.4.1	DT_TDS_DECT	2010, 2012, 2016	1
17.6.2	IT_NET_BBN	2010, 2013, 2014, 2015, 2016, 2017	1
17.6.2	IT_NET_BBP	2010, 2013, 2014, 2015, 2016, 2017	1
17.8.1	IT_USE_ii99	2011, 2012, 2015 & 2017, 2016, 2017	1
17.9.1	DC_FTA_TOTAL	2010, 2013, 2016	1
17.10.1	TM_TAX_WWTAV	2015, 2015 & 2017, 2016	-1
17.12.1	TM_TAX_ATRFD	2016	-1
17.15.1	SG_PLN_PRVRIMON	2018	1
17.15.1	SG_PLN_RECRIMON	2018	1
17.15.1	SG_PLN_PRVNDI	2018	1
17.15.1	SG_PLN_RECNDI	2018	1
17.15.1	SG_PLN_PRVRICTRY	2018	1
17.15.1	SG_PLN_RECRICTRY	2018	1
17.15.1	SG_PLN_REPOLRES	2018	1
17.15.1	SG_PLN_PRPOLRES	2018	1
17.16.1	SG_PLN_MSTKSDG	2018	1
17.18.3	SG_STT_NSDFSFDGVT	2018	1
17.18.2	SG_STT_FPOS	2018	1
17.18.3	SG_STT_NSDFSFDNR	2018	1
17.18.3	SG_STT_NSDFSFDTHR	2018	1
17.18.3	SG_STT_NSDSIMPL	2018	1
17.18.3	SG_STT_NSDFSND	2018	1
17.19.2	SG_REG_CENSUSN	2010, 2011, 2012, 2013, 2014, 2015	1
17.19.2	SG_REG_BRTH90N	2015, 2016	1

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Indicator	Series Code	Data years	Sign
17.19.2	SG_REG_DETH75N	2015, 2015 & 2017, 2016	1
17.19.1	SG_STT_CAPTY	2013, 2015, 2016	1

TABLE S4 List of official Sustainable Development Goals (SDGs), targets and indicators provided by the Global SDG Indicators Database (UN Statistics Division, 2019) with the respective gender, age- and geographical-dissagregation level.

Goal	Target	Indicator	Disaggregation	
1	1.1	1.1.1	Gender	Age
	1.2	1.2.1		Location
	1.3	1.3.1	Gender	
	1.4	1.4.1		Location
2	2.2	2.2.1		Age
		2.2.2		Age
3	3.2	3.2.1	Gender	Age
		3.2.2	Gender	Age
	3.3	3.3.1	Gender	Age
		3.3.4		Age
	3.4	3.4.1	Gender	Age
		3.4.2	Gender	
	3.5	3.5.2		Age
	3.7	3.7.1	Gender	Age
		3.7.2	Gender	Age
	3.9	3.9.3	Gender	
	3.a	3.a.1	Gender	Age
4	4.1	4.1.1	Gender	
	4.2	4.2.1		Age
		4.2.2	Gender	
	4.3	4.3.1	Gender	
	4.4	4.4.1	Gender	
	4.6	4.6.1	Gender	Age
	4.c	4.c.1	Gender	
5	5.2	5.2.1	Gender	Age
	5.3	5.3.1	Gender	Age
		5.3.2	Gender	Age
	5.4	5.4.1	Gender	Age
	5.5	5.5.1	Gender	
		5.5.2	Gender	
	5.6	5.6.1	Gender	Age
	5.b	5.b.1	Gender	
6	6.1	6.1.1		Location
	6.2	6.2.1		Location
	6.b	6.b.1		Location
7	7.1	7.1.1		Location
8	8.3	8.3.1	Gender	

TABLE S4 List of official Sustainable Development Goals (SDGs), targets and indicators provided by the Global SDG Indicators Database (UN Statistics Division, 2019) with the respective gender, age- and geographical-dissagregation level.

Goal	Target	Indicator	Disaggregation	
	8.5	8.5.1	Gender	
		8.5.2	Gender	Age
	8.6	8.6.1	Gender	Age
	8.7	8.7.1	Gender	Age
	8.8	8.8.1	Gender	
	8.10	8.10.1		Age
		8.10.2	Gender	Age
11	11.6	11.6.2	Location	
16	16.1	16.1.1	Gender	
		16.1.3	Gender	
	16.2	16.2.1		Age
		16.2.2	Gender	Age
		16.2.3	Gender	Age
	16.3	16.3.1	Gender	
	16.5	16.5.1	Gender	
	16.9	16.9.1		Age

TABLE S5 Summed variation of Sustainable Development Goal (SDGs) interactions among the six population groups – female, male, urban, rural, younger, and elderly population – in 2016. The percentages represents the average shares of monotone non-linear synergies (Smnl), monotone linear synergies (Sml), not-classifieds (Nc), monotone linear trade-offs (Tml) and monotone non-linear trade-offs (Tmnl). According to the maximal available number of countries among the income groups, we adjusted the minimal sample size (MSS).

Population Group	Countries		Synergies [%]		Not-classifieds [%]	Trade-offs [%]	
	All	MSS	Smnl	Sml	Nc	Tml	Tmnl
Female	220	122	1.42	59.05	35.58	3.71	0.24
Male	212	120	0.85	60.18	27.71	11.26	-
Urban	216	121	1.44	66.19	17.03	15.35	-
Rural	219	122	0.77	76.79	15.82	6.63	-
Younger	212	120	6.78	58.03	31.86	3.33	-
Elderly	200	116	0.48	66.01	22.45	10.84	0.22

TABLE S6 Summed variation of Sustainable Development Goal (SDGs) interactions among the four income groups – low-income countries (LIC), lower-middle-income countries (LMIC), upper-middle income-countries (UMIC), and high-income countries (HIC) – in 2016. The percentages represents the average shares of monotone non-linear synergies (Smnl), monotone linear synergies (Sml), not-classifieds (Nc), monotone linear trade-offs (Tml) and monotone non-linear trade-offs (Tmnl). According to the maximal available number of countries among the income groups, we adjusted the minimal sample size (MSS).

Population Group	Countries		Synergies [%]		Not-classifieds [%]	Trade-offs [%]	
	All	MSS	Smnl	Sml		Tml	Tmnl
HIC	76	60	0.26	29.03	53.42	17.19	0.09
UMIC	61	50	1.39	31.43	47.56	18.22	1.40
LMIC	46	40	4.73	36.30	45.44	11.39	2.14
LIC	31	28	4.79	39.88	33.40	19.77	2.16

TABLE S7 Summed variation of Sustainable Development Goal (SDGs) interactions among the four regional groups – Western World (WW), Latin America (LA), Asia-Pacific (AP), and Africa (AF) – in 2016. The percentages represents the average shares of monotone non-linear synergies (Smnl), monotone linear synergies (Sml), not-classifieds (Nc), monotone linear trade-offs (Tml) and monotone non-linear trade-offs (Tmnl). According to the maximal available number of countries among the regional groups, we adjusted the minimal sample size (MSS).

Population Group	Countries		Synergies [%]		Not-classifieds [%]	Trade-offs [%]	
	All	MSS	Smnl	Sml		Tml	Tmnl
WW	60	50	0.49	38.88	41.53	19.01	0.09
AF	60	50	3.36	33.02	48.68	13.19	1.76
AP	71	57	0.38	44.60	38.82	16.15	0.06
LA	55	46	0.12	45.49	26.19	28.20	-

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