

METHODOLOGY OF THE COMPILATION OF THE FUTURE POTENTIAL INDEX (FPI)

The Future Potential Index is a composite index of sub-indexes comprising a hierarchical indicator system based on the holistic future potential conceptual framework. Simply put, the FPI is a weighted average of carefully selected indicators, which best capture the elements of future potential.

The FPI comprises 22 indicators which were selected with the assistance of an expert panel. Each indicator is transformed into a combined indicator by incorporating its latest value and its change over time. During the process outliers are handled and all elements are normalized on a scale of 0 to 100. The combined indicators are weighted and aggregated according to the structure of the FPI framework.

In order to best grasp the concept of the indicator, a hierarchical structure was selected, making it possible to create sub-indicators at different levels to examine the contexts of the conceptual framework. In general, such hierarchical structures are the most suitable choice for the better presentation of complex, multi-dimensional phenomena.

In order to connect the normative standards with the pillars defined in the overall framework, definitions were prepared to describe the phenomena of each eight essential paired intersections of the two aspects, based on which appropriate indicators could later be selected.

SELECTING VARIABLES

The FPI is based on the indicator set of the Social Futuring Index (SFI): 8 indicators remained unchanged, 5 were slightly changed by expressing a different aspect of the measured phenomenon and 9 new indicators were selected. An expert panel with expertise in various academic disciplines and statistics examined the potential indicators of SFI and compiled the final set of indicators that best suit the written definitions.

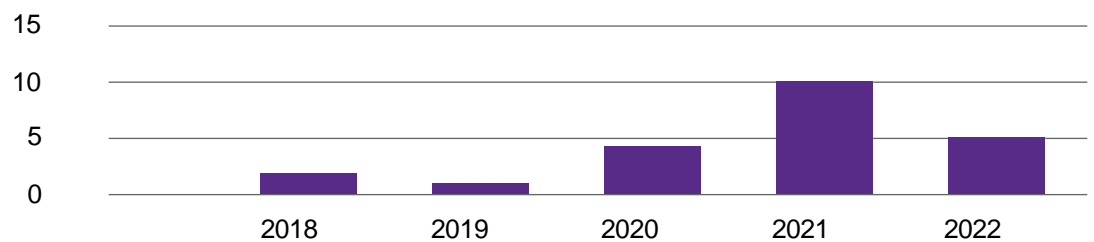
The selection process of the indicators followed the basic requirement that indicators had to

- be measurable/available,
- have a time series,
- be accessible from official, publicly available sources,
- have at least OECD-country coverage,
- have no or limited overlap with other indicators, and
- have a measurable and meaningful range.

Several workshops served to finalize and fine tune the indicator set to avoid overlaps and to maintain a balance between the different elements of the framework.

All indicators are designed to capture both the latest value of the given indicator and also its change over time. More details about the compilation of the indicators can be found under paragraph Normalization.

For each indicator, the most recent data available was used. (Available until July 2023). In most cases, 2020-2022 data were available. In case of 3 indicators, the model relies on earlier data.



For each indicator, the direction (positive or negative) of the evaluation was determined based on the concept of future potential. This was essential primarily for normalization.

IMPUTATION

Although the selection of indicators was based on maximum country coverage, some indicators of a few countries' data were either missing or significantly different in time from other countries. In these cases, the data were usually imputed using other reliable sources or in some cases supplemented with the value of a similar country. The imputed data represent only about 2 percent of the total data used.

NORMALIZATION AND COMPILATION OF INDICATORS

Normalization is required prior to any data aggregation, as the indicators in a data set often have different measurement units or order of magnitude. After filtering outliers with the use of an interquartile range, the min-max method was chosen because it best met the needs of a hierarchical model. There are no negative numbers, or there is no problem with handling 0, additivity is retained.

All indicators are designed to capture both the latest value of the given indicator and its change over time. This resulted in a combined value, thereby also capturing dynamic performance.

Change over time is measured by the absolute change rather than the relative change. The reason for this was to reduce the effect of small values change (i.e. a value changing from 1 to 2 is 100% more, while from 50 to 51 is only 2% more).

The basic data for each indicator is the latest available value (filtered from outliers and normalized) and its absolute change (also filtered from outliers and normalized) compared to 2010 (in general).

The 'final' normalized indicator for each indicator is calculated as the sum of these two factors, which are then re-normalized (to a value between 0-100) for the ease of interpretation. The two factors are equally weighted, so the range of the normalized values are 100 for both factors.

NORMALIZATION OF THE MOST RECENT VALUE

(interpretation range of the indicator 0-100)

$$v_{norm} = \frac{v - v_{min}}{v_{max} - v_{min}} \times 100 \times i$$

where

v is the value of the country

v_{min} minimum value

v_{max} maximum value

i interpretation direction of indicator, +1 for positive (the higher the better)
and -1 for negative (the lower the better)

NORMALIZATION OF CHANGE

(the range of interpretation of the indicator is equal distance from 0, depends on weight $-(100/2w) - +(100/2w)$), for equal weight to the value of the recent data, -50 - +50)

$$c_{norm} = \frac{c - c_{min}}{c_{max} - c_{min}} \times 100 \div 2w \times i$$

c is the value of the change in a given country

c_{min} minimum value

c_{max} maximum value

w is the ratio of the most recent value to the weight of change 1:x

determination of c_{min} and c_{max} - which is necessary to be symmetric, i.e. no change equals 0 even after normalization

if $|c_{min}| \leq |c_{max}|$ then $c_{min} = -1 * c_{max}$

if $|c_{min}| > |c_{max}|$ then $c_{max} = -1 * c_{min}$

COMBINED VALUE, DYNAMIC PERFORMANCE NORMALIZATION

(range of interpretation of the indicator 0-100)

$$m_{norm} = \frac{(v_{norm} + c_{norm}) - (v_{norm} + c_{norm})_{min}}{(v_{norm} + c_{norm})_{min} - (v_{norm} + c_{norm})_{min}} \times 100$$

WEIGHTING AND AGGREGATION

Weights are determined by expert consensus. They were defined on the basis of the conceptual framework, considering the importance of normative standards. All indicators within each dimension were given equal weights.

Normative standards	weights by normative standards	Dimensions	weights by dimensions	number of indicators within the dimension	weights by indicators
Peace & order	40	Safety	13,3	3 indicators	4,4
		Assets	13,3	3 indicators	4,4
		Functionality	13,3	3 indicators	4,4
Attachment & Community	30	Family	15	2 indicators	7,5
		Belonging	15	2 indicators	7,5
Care & Generativity	20	Material advancement	10	3 indicators	3,3
		Self reliance	10	3 indicators	3,3
Balance & Health	10	balance and generativity	10	3 indicators	3,3

Aggregation was based on weights and normalized indicator values. Based on this, sub-indicators can also be defined (at the dimension and normative standard level). All composite indicators are to be interpreted on a scale from 0 to 100.

Also, the composite indicator at any given level can be built from the sub-indicators that make it up. This greatly facilitates the analysis of the effect of the indicator composition.