Positive Peace 2023 Briefing

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- Global Trends
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- HALO Framework

Analysing the factors that build, predict and sustain peace.

IEP Institute for Economics & Peace

IEP

Quantifying Peace and its Benefits

The Institute for Economics & Peace (IEP) is an independent, non-partisan, non-profit think tank dedicated to shifting the world's focus to peace as a positive, achievable, and tangible measure of human well-being and progress.

IEP achieves its goals by developing new conceptual frameworks to define peacefulness; providing metrics for measuring peace; and uncovering the relationships between business, peace and prosperity as well as promoting a better understanding of the cultural, economic and political factors that create peace.

IEP is headquartered in Sydney, with offices in New York, The Hague, Mexico City, Brussels and Harare. It works with a wide range of partners internationally and collaborates with intergovernmental organisations on measuring and communicating the economic value of peace.

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WHY POSITIVE PEACE IS TRANSFORMATIONAL

Positive Peace is a transformational concept because it shifts the focus from the negative to the positive by describing the necessary conditions for peace and society to flourish. The systemic nature of Positive Peace not only strengthens peace but is also associated with other desirable outcomes for society, such as higher GDP growth, better measures of wellbeing, higher levels of resilience and more harmonious societies. Importantly, it provides a theory of social change, explaining how societies transform and evolve. Positive Peace describes an optimal environment under which human potential can flourish.

Combined with Halo, IEP's social systems analysis tool, it provides not only the ability to map systems, but to also understand the transactions flows of a system, identifying emergent qualities, self-regulating functions, and the changing dynamics of the system over time.

A parallel can be drawn with medical science. The study of pathology has led to numerous breakthroughs in our understanding of how to treat and cure disease. However, it was only when medical science turned its focus to the study of healthy human beings that we understood what was needed to do to stay healthy: physical exercise, a good mental disposition, a balanced diet, and a sense of purpose. This could only be learned by studying what was working. In the same way, the study of conflict is different from the study of peace, producing very different insights. Understanding what creates sustainable peace cannot be found in the study of violence alone.

Humanity is nearing a tipping point and facing challenges unparalleled in its short history. Many of these problems are global in nature, such as climate change, ever decreasing biodiversity, depletion of the earth's freshwater, and overpopulation. Such global challenges call for global solutions and require cooperation on a scale unprecedented in human history. In a hyper-connected world, the sources of many of these challenges are multidimensional, increasingly complex and span national borders. For this reason, finding solutions requires fundamentally new ways of thinking.

Peace is a prerequisite for the survival of humanity. Without peace, it is not possible to achieve the levels of trust, cooperation, and inclusiveness necessary to solve these challenges, let alone empower international institutions and organisations necessary to address them. In the past, peace may have been the domain of the altruistic; but in the 21st century it's in everyone's self-intertest.

Positive Peace provides a framework to understand and address the many complex challenges facing humanity. It is transformational in that it is a cross-cutting facilitator of progress, making it easier for businesses to sell, entrepreneurs and scientists to innovate, individuals to produce and governments to effectively regulate.

Positive Peace is systemic and understanding systems thinking is required to grasp it in its entirety. Systems thinking originated in the study of organisms and has been extended into sociology. A system is a set of parts that interact to achieve a desired purpose/function and driven by intent.

Systems thinking can also assist in understanding the way countries function and evolve. When combined with Positive Peace, it provides new ways of conceptualising and explaining societal change. A system is more than the sum of its parts and cannot be understood merely by breaking it down and analysing its constituent parts. Positive Peace consists of eight Pillars, but each of these Pillars does not correlate with peace as strongly as Positive Peace. This highlights that the whole is more than the simple sum of its components.

The processes contained within systems can also be mapped and understood through Halo which has 24 analytic functions that define the flows and state changes within a system. One example is the stocks and flows within system, and between systems which could be capital, people or ideas. Through understanding the flows and the size of the stocks emergent and sunsetting properties can be identified as well as the strength of the various subsystems contained within the system.

Such an approach distinctly contrasts with the traditional notion of linear causality, which dominates decision making today: identify a problem, decide upon its causes and tackle them in isolation. Without a fuller understanding of the underlying system dynamics, the linear approach is often ineffective and creates unintended consequences. The failure to solve some of society's fundamental challenges is a testimony to this. Systems thinking opens new ways of understanding nations and how they evolve. In systems, relationships and flows are more important than events. Events or problems represent the outcomes of the relationships and flows. This is why it is important to look at the multidimensional concept of Positive Peace, combined with Halo as a holistic, systemic framework.

Positive Peace defines the goals that a system needs to evolve too. Interventions should incrementally nudge the system towards ever higher levels of Positive Peace, rather than creating radical change, which is disruptive, and disorienting and can create unease and resentment.

Importantly, viewing nations as systems provides a framework for understanding the relationships between humanity and the broader systems, such as the atmosphere and biosphere, which we intersect and depend upon. Systems are self-regulating and self-modifying and operate on two levels: first as a collection of interconnected subsystems and second as part of the larger systems surrounding it. Understanding these interdependencies is essential to meeting the global challenges of our age.

Different countries have different aims or intent. Societies also have both formal and informal rules, referred to as encoded norms, which govern social behaviour, and aim to maintain the system in a stable state. They regulate inputs, creating feedback loops. This can be observed in many societal processes, such as when a government stimulates the economy in response to a drop in GDP or deploys more policing resources when there is a rise in crime. Each country's system will be unique with different social norms and governance, although following the same general principles.

Because of the diversity in intent and encoded norms, any two nations may react differently to the same stimulus. Tipping points also occur within systems due to lagged and non-linear relationships. IEP's research uncovers evidence of tipping points in relation to peace and corruption and peace and per capita income, to name just two examples. In the past, societies have been investigated through the lens of causality; in the future, embracing these holistic, systemic approaches will forge our ability to navigate an age of unprecedented challenges.

Seen in this light, Positive Peace and systems thinking comprise an overarching framework for understanding and achieving progress not only in the level of global peacefulness, but in many other interrelated areas, including better economic progress, better ecological performance, happiness, stronger development, and social advancement. All these factors have a robust statistical relationship with Positive Peace.

Positive Peace provides the optimal environment for human potential to flourish.

Executive Summary

This report highlights the latest findings of the Institute for Economics and Peace's (IEP) research into Positive Peace and systems thinking.

Positive Peace is defined as the *attitudes, institutions and structures that create and sustain peaceful societies*. It is conceptually and empirically related to many constructive aspects of social development and can be used in multiple contexts. It can also be used to compile an index – the Positive Peace Index (PPI). This allows for the comparison and tracking of the factors that create flourishing societies. These and other concepts related to Positive Peace are covered in the first section of this report, as well as general PPI results, including rankings and changes over time.

Positive Peace is strongly associated with system concepts to the extent that it is difficult to separate the two. IEP has further deepened its unique understanding of how societal systems function and using Halo provides a comprehensive approach to analysing societal systems.

The same factors that create lasting peace also lead to many other positive outcomes to which societies aspire. For example, countries with higher levels of Positive Peace:

- are more resilient,
- are associated with robust and thriving economies,
- have better performance on ecological measures,
- enjoy higher levels of wellbeing and happiness,
- have stronger measures of social cohesion,
- show greater satisfaction with living standards and more.

All these qualities are systemically linked and are a by-product of the quality of the system. Such societies are less encumbered by the costs and wastage of violence or political instability, have higher productivity, and better access to information and are not heavily weighed down by corruption or ineffective governments, to name some.

This is why Positive Peace can create an optimal environment for human potential to flourish.

Social systems that operate with higher degrees of resilience can offer more effective protection to their citizens against adverse shocks, whether political, environmental or economic. High-resilience societies are also more likely to take advantage of positive disruptions or opportunities arising from the creation of new economic paradigms and technological innovation. Frequently, after experiencing a shock, societies high in Positive Peace evolve systemically to be stronger and more capable of recovering from future shocks.

Positive Peace can be used as a predictor of future substantial falls in peace many years in advance, thereby giving the international community forewarnings and time to act. Through the modelling of the relationship between the PPI and the actual peace of a country, as measured through the Global Peace Index (GPI), it is possible to predict large falls in peace. IEP's model, called the Positive Peace deficit model, shows that more than 80 per cent of the countries predicted to fall in peace did so. This remarkable predictive power is discussed in the second section of this report.

Additionally, nations with a surplus of Positive Peace record substantial improvements in peace in the subsequent decade. This underscores the importance of Positive Peace as a gauge of societal resilience and the predictive role it plays in assessing future societal development. It is also important for business, as countries with better Positive Peace outcomes have superior economic performance than their peers. The GDP per capita in countries that improved in the PPI outgrew that of their peers by 1.5 percentage points per year in the 2009-2022 period.

Similarly, corporate profitability is higher among nations improving their Positive Peace scores. In the industrial, construction and manufacturing sectors, corporate profits among PPI improvers outgrew that of other nations by three percentage points per year on average since 2009. Household demand grows twice as fast as elsewhere, inflation is three times less volatile, foreign direct investment and international trade growth is higher, while sovereign bonds and exchange rates also improve.

COVID-19 had an impact on Positive Peace. The strong improvement in Positive Peace recorded from 2009 until 2019, weakened in subsequent years, because of the social and economic disruptions stemming from policy responses to the pandemic.

Regarding the management of the pandemic, nations with higher levels of societal resilience, as measured by Positive Peace, were better at protecting their citizens – they had more hospital beds, higher vaccination rates and lower mortality rates. These outcomes are the result of many systemic factors which are captured in the Positive Peace model.

Globally, Positive Peace has strengthened over the past decade, with the PPI score improving by more than 2 per cent since 2009. Improvements in Positive Peace happen gradually due to the system-wide nature of change. A total of 125 countries or 77 per cent of the 163 nations assessed in the PPI improved their scores over the past decade.

Much of this improvement came in the form of economic development, better health outcomes and more importantly greater access to technologies, especially in the information and communication areas. There has been an increase in per-capita income, a reduction in aggregate levels of poverty

and a big rise in the number of persons accessing the Internet. These economic and technological developments are captured in the *Structures* domain of Positive Peace, which improved by 7.5 per cent since 2009.

However, these advancements have been partially offset by a deterioration in social attitudes, captured by the *Attitudes* domain, which deteriorated by more than 2 per cent over the last decade. Sixty per cent of the countries deteriorated in this domain. There have been deteriorations in the level of trust in governments, grievances between groups, measures of corruption, press freedoms, conflict between elites and misinformation. Some of the countries with the biggest deteriorations in the *Attitudes* domain in the 2009–2022 period were the US, Brazil, Poland, Venezuela, Hungary, Russia, and Syria.

The *Institutions* domain, which gauges the effectiveness, transparency and reliability of the formal and informal organisations that manage societies, recorded the slightest improvement in the 2009-2022 period. However, there were deteriorations in some key measures including access to public services and government openness.

Six of the eight Pillars of Positive Peace posted improvements since 2009. *Free Flow of Information* posted the largest improvement, at over 10 per cent, because of more widespread access to the Internet. *High Levels of Human Capital* and *Acceptance of the Rights of Other* also posted large improvements. The improvements in *Good Relations with Neighbours*, *Equitable Distribution of Resources* and *Sound Business Environment* were only marginal, reflecting weak outcomes in law to support equal treatment of population segments, access to public services, and regulatory quality.

The two Pillars of Positive Peace to record a deterioration were *Low Levels of Corruption* and *Well-Functioning Government*, deteriorating by 1.8 per cent and one per cent respectively. The *Low Levels of Corruption* Pillar deteriorated in 101 countries, or 62 per cent of the nations assessed in the PPI and improved in only 62 countries.

In the second section, IEP develops a new unique framework and holistic methodology for analysing societies from a systems perspective called Halo. The research also incorporates systems thinking, which provides a more accurate understanding of how nations operate, and societies develop over time, rather than the traditional approach of cause-and-effect linear thinking.

The model identifies the key attributes of societal systems and delineates a 24 step approach for studying them, leading to the development of a better understanding of the overall system and its dynamics. Written in an accessible, non-technical way, the section highlights how the methodology can be used and adapted for different applications. The set of steps can be expanded or reduced depending on need and is applicable for country as well as community studies. It can also be used in simple exercises, lasting days or lengthy analyses involving months or years. This Halo methodology is at the core of IEP's process to engage in systems thinking and is successfully used in research and consulting by the Institute.

When combined with systems thinking, the analysis of Positive

Peace produces a new theory of social change. Developments in Positive Peace precede societal changes in peacefulness and human development, either for better or worse. Stimuli and shocks have cascading effects, due to the feedback loops contained within national systems, pushing societies into virtuous or vicious cycles. However, these cycles can be understood, planned, and moulded to produce the best social outcomes. Positive Peace provides a roadmap of the things societies need to change, to either consolidate virtuous cycles or break vicious ones.

This report also describes practical examples of how IEP's Positive Peace framework has been operationalised. This work is developed through the Positive Peace Ambassador Program, Positive Peace workshops and several partnerships with organisations with global and local reach.

Taken together, the findings in this report have important implications for building and sustaining peace.

- There are no quick and easy solutions. Building and sustaining societal development requires many society-wide improvements progressing in concert with one another over long periods of time.
- Resilience should be the priority. Through focusing on the factors that are most critical, it is possible to build resilience in cost-effective ways.
- As Positive Peace progresses, it enables an environment where human potential may more easily flourish.

Without a deeper understanding of how societies operate, it will not be possible to solve humanity's major global challenges. Positive Peace provides a unique framework from which to manage human affairs and relate to the broader ecosystems upon which we depend. Positive Peace in many ways is a facilitator, making it easier for workers to produce, businesses to sell, entrepreneurs and scientists to innovate and governments to serve the interests of their people.

2023 POSITIVE PEACE INDEX

A SNAPSHOT OF THE GLOBAL LEVELS OF POSITIVE PEACE

THE STATE OF POSITIVE PEACE

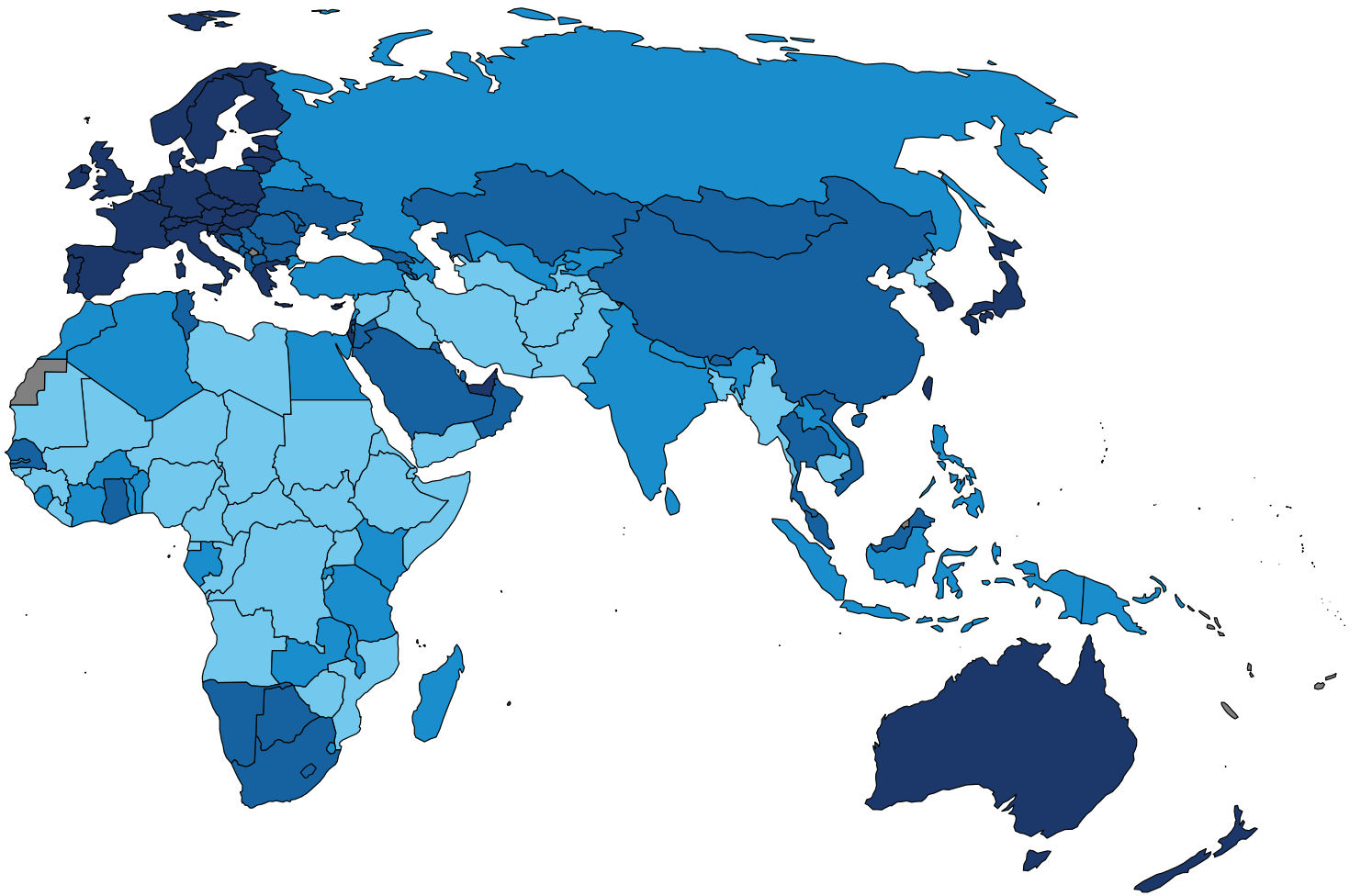| Very high	High	Medium	Low	Not included
1	2.66	3.25	3.64	5
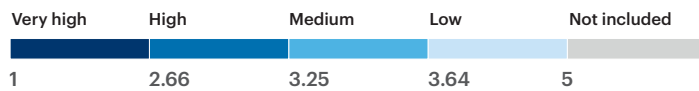
RANK	COUNTRY	SCORE	CHANGE	RANK	COUNTRY	SCORE	CHANGE	RANK	COUNTRY	SCORE	CHANGE
1	Norway	1.400	↑ 1	30	Taiwan	2.304	↑ 8	57	Bhutan	2.900	↑ 14
2	Finland	1.425	↑ 1	31	Latvia	2.310	↑ 4	58	Mongolia	2.942	↑ 4
3	Denmark	1.440	↓ 2	32	Slovakia	2.364	↑ 1	59	Armenia	2.968	↑ 16
4	Switzerland	1.453	↑ 1	33	Cyprus	2.370	↓ 1	60	Ghana	3.000	↔
5	Sweden	1.465	↓ 1	34	Croatia	2.432	↑ 3	61	Serbia	3.001	↓ 5
6	Ireland	1.592	↑ 4	35	Costa Rica	2.434	↑ 1	62	Moldova	3.006	↑ 8
7	New Zealand	1.653	↑ 5	36	Israel	2.438	↑ 4	63	Tunisia	3.021	↓ 4
8	Australia	1.666	↓ 1	37	Poland	2.439	↓ 8	64	Oman	3.023	↓ 6
9	Germany	1.694	↑ 2	38	Greece	2.490	↓ 7	65	South Africa	3.027	↓ 4
10	Iceland	1.704	↓ 4	39	United Arab Emirates	2.500	↑ 2	66	Thailand	3.033	↑ 7
11	Netherlands	1.723	↓ 3	40	Hungary	2.534	↓ 6	67	China	3.081	↑ 11
12	Singapore	1.730	↑ 5	41	Mauritius	2.644	↓ 2	68	Peru	3.103	↑ 1
13	Canada	1.732	↓ 4	42	Trinidad & Tobago	2.683	↑ 3	69	Brazil	3.107	↓ 26
14	Japan	1.757	↑ 1	43	Bulgaria	2.709	↓ 1	70	Kazakhstan	3.117	↑ 23
15	Belgium	1.827	↑ 4	44	Romania	2.726	↑ 2	71	Namibia	3.117	↓ 7
16	France	1.868	↓ 2	45	Malaysia	2.727	↑ 9	72	Saudi Arabia	3.149	↑ 22
17	Austria	1.873	↓ 4	46	Argentina	2.730	↑ 5	73	Bahrain	3.149	↓ 8
18	Slovenia	1.982	↑ 3	47	Kosovo	2.740	↔	74	Dominican Republic	3.168	↑ 21
19	Portugal	1.984	↑ 1	48	Qatar	2.758	↓ 4	75	Vietnam	3.178	↑ 8
20	South Korea	1.987	↑ 4	49	Botswana	2.782	↔	76	Ukraine	3.178	↑ 5
21	United Kingdom	1.999	↓ 3	50	Montenegro	2.797	↓ 2	77	Bosnia & Herzegovina	3.195	↓ 5
22	Estonia	2.095	↑ 1	51	Jamaica	2.803	↑ 4	78	Senegal	3.206	↓ 2
23	Czechia	2.151	↑ 2	52	Panama	2.838	↔	79	Colombia	3.209	↑ 6
24	Spain	2.170	↓ 2	53	Georgia	2.840	↑ 14	80	Jordan	3.213	↓ 12
25	Uruguay	2.175	↑ 5	54	Kuwait	2.864	↓ 4	81	Ecuador	3.231	↑ 9
26	United States	2.185	↓ 10	55	North Macedonia	2.866	↑ 2	82	India	3.246	↓ 5
27	Lithuania	2.209	↔	56	Albania	2.884	↓ 3	83	Paraguay	3.255	↑ 8
28	Italy	2.236	↓ 2								
29	Chile	2.281	↓ 1								

RANK	COUNTRY	SCORE	CHANGE
84	Indonesia	3.260	↑ 16
85	Benin	3.276	↑ 2
86	Belarus	3.280	↓ 6
87	Guyana	3.284	↓ 5
88	Mexico	3.293	↓ 22
89	Morocco	3.312	↓ 3
90	Cuba	3.316	↑ 13
91	Algeria	3.316	↑ 6
92	Bolivia	3.335	↓ 4
93	Sri Lanka	3.340	↑ 5
94	Turkey	3.353	↓ 31
95	Russia	3.367	↓ 21
96	El Salvador	3.380	↓ 17
97	Tanzania	3.395	↓ 13
98	Philippines	3.403	↑ 4
99	Timor-Leste	3.415	↑ 13
100	Palestinian Territories	3.421	↓ 8
101	Uzbekistan	3.422	↑ 34
102	Honduras	3.469	↓ 6
103	Lesotho	3.473	↓ 2
104	Gambia	3.487	↑ 27
105	Kyrgyzstan	3.497	↑ 2
106	Malawi	3.505	↑ 4
107	Zambia	3.512	↓ 1
108	Laos	3.530	↑ 25
109	Kenya	3.530	↑ 5
110	Sierra Leone	3.540	↑ 8
111	Gabon	3.556	↔

RANK	COUNTRY	SCORE	CHANGE
112	Rwanda	3.566	↑ 8
113	Azerbaijan	3.592	↑ 4
114	Nepal	3.593	↑ 7
115	Burkina Faso	3.603	↓ 10
116	Togo	3.605	↑ 9
117	Côte d'Ivoire	3.606	↑ 28
118	Madagascar	3.615	↑ 10
119	Papua New Guinea	3.626	↓ 4
120	Egypt	3.635	↓ 4
121	Lebanon	3.638	↓ 32
122	Eswatini	3.641	↑ 1
123	Iran	3.646	↓ 1
124	Mozambique	3.660	↓ 20
125	Guatemala	3.670	↓ 12
126	Bangladesh	3.673	↑ 8
127	Nicaragua	3.692	↓ 28
128	Cambodia	3.712	↑ 4
129	Djibouti	3.719	↓ 2
130	Turkmenistan	3.725	↑ 7
131	Pakistan	3.729	↑ 10
132	Angola	3.749	↑ 16
133	Liberia	3.771	↓ 3
134	Niger	3.794	↓ 10
135	Uganda	3.833	↑ 16
136	Tajikistan	3.845	↔
137	Ethiopia	3.851	↑ 1
138	Nigeria	3.856	↑ 6
139	North Korea	3.875	↑ 1

RANK	COUNTRY	SCORE	CHANGE
140	Zimbabwe	3.890	↑ 14
141	Mali	3.891	↓ 12
142	Mauritania	3.904	↓ 3
143	Guinea-Bissau	3.910	↓ 1
144	Libya	3.937	↓ 36
145	Guinea	3.950	↑ 2
146	Burundi	3.951	↓ 3
147	Cameroon	3.964	↑ 3
148	Myanmar (Burma)	3.973	↑ 4
149	Iraq	3.982	↑ 4
150	Congo - Brazzaville	3.994	↓ 4
151	Venezuela	4.037	↓ 42
152	Haiti	4.067	↓ 3
153	Equatorial Guinea	4.070	↑ 2
154	Sudan	4.105	↑ 6
155	Eritrea	4.225	↑ 1
156	Afghanistan	4.236	↑ 3
157	Syria	4.247	↓ 31
158	Congo - Kinshasa	4.258	↑ 3
159	Chad	4.339	↑ 3
160	Central African Republic	4.393	↓ 3
161	Somalia	4.447	↑ 2
162	South Sudan	4.479	↓ 4
163	Yemen	4.490	↓ 12

Key Findings

Positive Peace Fundamentals

- Positive Peace is defined as the *attitudes, institutions and structures that create and sustain peaceful societies*.

- High Positive Peace also leads to many other positive outcomes that society feels are important, such as economic strength, resilience and wellbeing.

- Therefore, Positive Peace creates the optimal environment for human potential to flourish.

- The most peaceful countries in the world perform strongly on all eight Pillars of Positive Peace.

- High Positive Peace countries are more likely to maintain stability, adapt and recover from shocks.

- Countries that perform well in Positive Peace are more likely to achieve and sustain high levels of peace.

Global and Regional Trends

- More countries improved in Positive Peace, a total of 125, or almost 77 per cent of all countries assessed, than deteriorated from 2009 to 2022.

- Positive Peace improved two per cent globally in the 2009-2022 period.

- This improvement was mainly driven by the *Structures* domain of Positive Peace, which improved by 7.5 per cent since 2009. This domain measures the technological and economic foundations that support social development.

- The *Attitudes* domain deteriorated by more than two per cent in the past decade. This demonstrates greater political polarisation, more intolerance of different views and opinions and less trust in governments.

- The *Institutions* domain recorded a marginal improvement in the period.

- Six of the eight Pillars of Positive Peace have improved since 2009, although the improvements in *Good Relations with Neighbours*, *Equitable Distribution of Resources* and *Sound Business Environment* were minimal.

- The two Pillars of Positive Peace to record a deterioration were *Low Levels of Corruption* and *Well-Functioning Government*.

- Almost all regions recorded improvements in Positive Peace over the past decade, with the Middle East and North Africa (MENA) region improving only marginally. The only region to record a deterioration was North America.

- The largest country improvements in the PPI over the decade were recorded for Uzbekistan, Côte d'Ivoire, Georgia, Bhutan, and Armenia. The steepest deteriorations were in Syria, Venezuela, Yemen, Libya, and South Sudan.

- From 2009 to 2022, the per capita GDP of countries that improved in the PPI rose by an average of two per cent per year. This compares with 0.5 per cent per year for the other nations.

- Of the 30 countries with a substantial Positive Peace Deficit in 2009, 80 per cent or 24 of them deteriorated in the GPI in the 2009-2022 period. A Positive Peace deficit is where the actual peacefulness of a country is substantially higher than what its levels of Positive Peace would suggest.

- Many of the countries recording the largest increases in violence in the 2009-2022 period were countries with Positive Peace deficit in 2009, such as Syria, Libya, Yemen, Nicaragua, Egypt, and Burkina Faso.

- The four countries with the largest deficits in 2022 were Equatorial Guinea, Rwanda, Sierra Leone and Angola. They are the nations most likely to have falls in peace in the future.

The Benefits of Societal Resilience

In addition, the Positive Peace Report 2022 found that:

- Inflation in countries where the PPI improved was on average three times less volatile than in countries where Positive Peace deteriorated in the past decade. Inflation volatility is detrimental to growth because it creates uncertainty, thereby reducing demand and business investment.

- Household consumption in nations where Positive Peace improved grew two times faster from 2009 to 2020 than where the PPI deteriorated.

- High levels of societal resilience are associated with greater life satisfaction because individuals are not weighed down by concerns about survival or excessive poverty.

- In a large proportion of Western European nations and full democracies, females are more satisfied with their own standards of living than males.

POSITIVE PEACE:
A MEASURE OF SOCIETAL RESILIENCE

FIGURE A.1

NEGATIVE PEACE
... is the absence of violence or fear of violence.

+ POSITIVE PEACE
... is the attitudes, institutions & structures that create and sustain peaceful societies.

- Positive Peace is a gauge for *societal resilience*. Communities, societies and countries that operate with high levels of Positive Peace are more capable of protecting their populations for adverse shocks, such as economic downturns, political crises or natural disasters. These societies also tend to rebuild their internal structures and recover more rapidly in the aftermath of such shocks.

- Positive Peace is defined as the *attitudes, institutions and structures* that create and sustain peaceful societies. These same factors also lead to many other positive outcomes that society feels are important. Higher levels of Positive Peace are statistically linked to higher GDP growth, better environmental outcomes, higher measures of wellbeing, better developmental outcomes and stronger resilience.

- Positive Peace has been empirically derived by IEP through the analysis of tens of thousands of cross-country measures of socio-economic development, including surveys and expert assessments, to determine which have statistically significant relationships with actual peace as measured by the Global Peace Index (GPI).

- Positive Peace is measured by the Positive Peace Index (PPI), which consists of eight Pillars, each containing three indicators. This provides a baseline measure of the effectiveness of a country's capabilities to build and maintain peace. It also provides a

measure for policymakers, researchers and corporations to use for effective interventions, design, monitoring and evaluation.

- Positive Peace can be used as the basis for empirically measuring a country's resilience — its ability to absorb, adapt and recover from shocks, such as climate change or economic transformation. It can also be used to measure fragility and help predict the likelihood of conflict, violence and instability.

FIGURE A.2
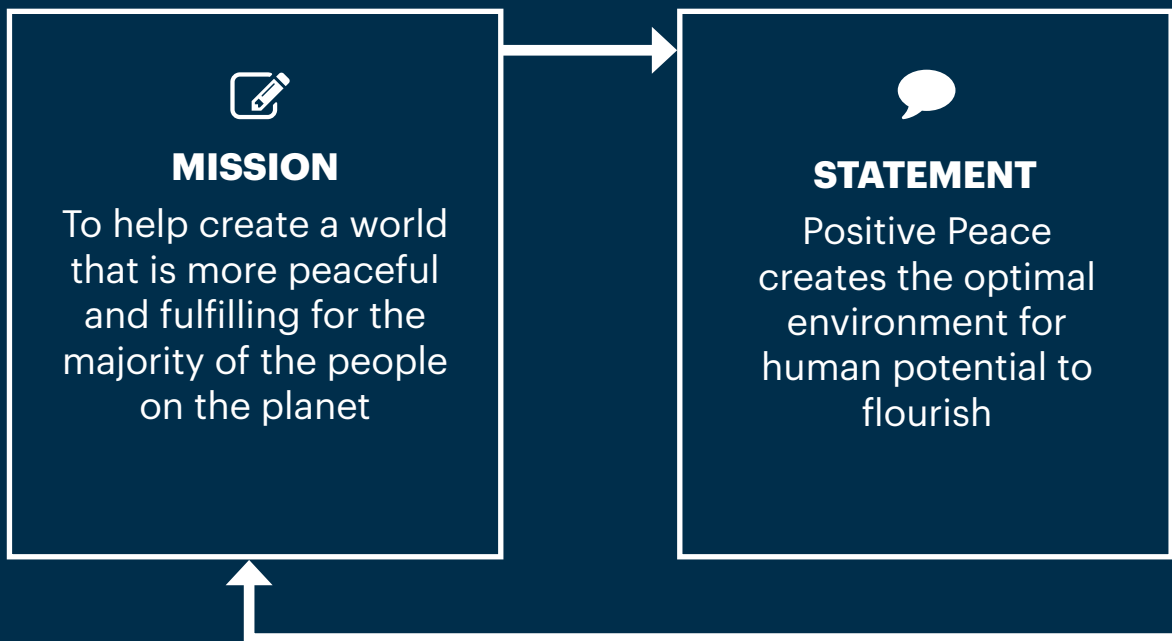
The Pillars of Positive Peace

A visual representation of the factors comprising Positive Peace. All eight factors are highly interconnected and interact in varied and complex ways.

POSITIVE PEACE AS A

Positive Peace provides a process of change that explains the functioning

MISSION
To help create a world that is more peaceful and fulfilling for the majority of the people on the planet

STATEMENT
Positive Peace creates the optimal environment for human potential to flourish

The 'process of change' framework is a tool that shows the logical steps from the inputs behind a policy or programme to the outputs and outcomes that are expected to result.
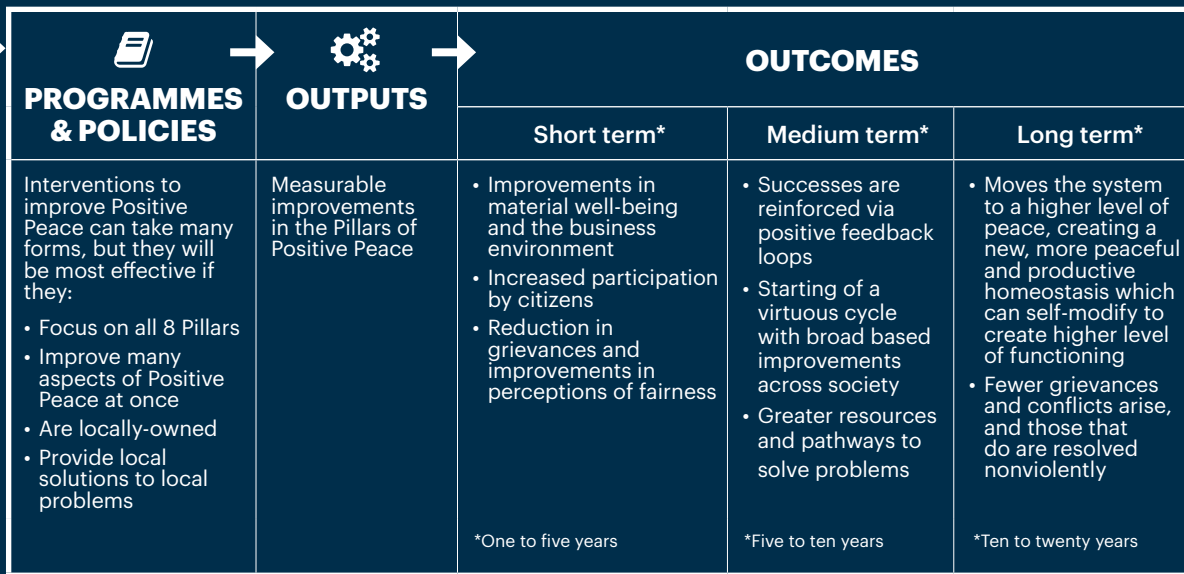
Positive Peace consists of eight Pillars that have been empirically derived. It describes the major factors that govern change within a society. These factors operate inter-dependently, mutually affecting each other, therefore making it difficult to understand the true cause of any event. Systems thinking provides a model to explain the interactions and changes within the system. This means that more emphasis is placed on the relationships and flows within the system than on a single event, such as a terrorist attack or the election of a controversial leader.

When programmes or policies achieve measurable improvements in the Pillars of Positive Peace, they accelerate social progress. Immediate programme outputs can help raise standards of living, improve information flows and can build trust and confidence. Other programmes can help to resolve immediate grievances, thereby reducing the amount of conflict in society. If momentum is maintained, these successes can reinforce one another and set the stage for further progress. As successes build upon one another, the system moves to a more peaceful equilibrium. Feedback loops help the system 'reset,' so its homeostasis is at a higher level of peace and wellbeing. The system will persistently return to homeostasis through feedback loops, which is why building Positive Peace requires a number of sustained interventions. Positive Peace works slowly over time. Radical changes to systems are likely to

PROCESS OF CHANGE

of a nation or society and why highly peaceful societies thrive.

PROGRAMMES & POLICIES	OUTPUTS	OUTCOMES		
		Short term*	**Medium term***	**Long term***
Interventions to improve Positive Peace can take many forms, but they will be most effective if they: • Focus on all 8 Pillars • Improve many aspects of Positive Peace at once • Are locally-owned • Provide local solutions to local problems	Measurable improvements in the Pillars of Positive Peace	• Improvements in material well-being and the business environment • Increased participation by citizens • Reduction in grievances and improvements in perceptions of fairness	• Successes are reinforced via positive feedback loops • Starting of a virtuous cycle with broad based improvements across society • Greater resources and pathways to solve problems	• Moves the system to a higher level of peace, creating a new, more peaceful and productive homeostasis which can self-modify to create higher level of functioning • Fewer grievances and conflicts arise, and those that do are resolved nonviolently
		*One to five years	*Five to ten years	*Ten to twenty years

Although this framework is usually applied to specific activities and interventions, the learnings from IEP's Positive Peace research can be represented in the same way.

disrupt the system, therefore change is more like continually nudging the system in the right direction. The most effective systemic change is widespread and incremental.

Interventions to improve Positive Peace can be implemented by governments, businesses, civil society organizations or others, as has been the case in IEP's Positive Peace workshops. Outputs are the measurable things that the programmes produce, such as a 30 per cent increase in school attendance and the outcomes are the social changes that result, for example, improved High Levels of Human Capital in the community.

The diagram above presents IEP's most up-to-date understanding of how increasing levels of Positive Peace creates the optimal environment for human potential to flourish and leads to societies reducing violence. Interventions to improve Positive Peace can be implemented by governments, businesses, civil society organisations, or groups of people or volunteers, as has been the case in IEP's Positive Peace workshops.

1 | Positive Peace Index, Results & Trends

Key Findings

- One hundred and twenty-five countries improved in Positive Peace compared to 37 that deteriorated between 2009 to 2022.

- These improvements were mainly driven by *Free-Flow of Information, High Levels of Human Capital*, and *Acceptance of the Rights of Others*.

- The two Pillars of Positive Peace to record a deterioration were *Low Levels of Corruption* and *Well-Functioning Government*.

- *Equitable Distribution of Resources* and *Sound Business Environment* recorded a slight improvement.

- Positive Peace improved two per cent globally from 2009 to 2022.

- The global PPI improved every year without interruption from 2009 until 2019. The slight decline since 2019 was associated with COVID-19 and the global recession created by the policy responses to the pandemic.

- Eight out of the nine regions improved in Positive Peace from 2009 to 2022, with North America being the only exception.

- The Asia-Pacific region had the largest regional improvement.

- Improvements in the PPI are due to the *Structures* domain of Positive Peace, which showed substantial development since 2009, while the *Institutions* domain recorded only a small improvement in the period.

- In contrast, the *Attitudes* domain deteriorated by two per cent globally from 2009 to 2022. This domain deteriorated in 99 of the total 163 countries assessed, reflecting increased polarisation of views on political and economic administration matters, as well as a deterioration in the quality of information disseminated to the public.

- The largest deteriorations in Positive Peace occurred in Syria, Venezuela, Yemen, Libya, and South Sudan. All these countries are affected by conflict.

The Positive Peace Index (PPI) measures the level of societal resilience of 163 countries, covering 99.7 per cent of the world's population. The PPI is the most comprehensive global, quantitative approach to defining and measuring the positive qualities of peace. This body of work provides an actionable platform for development and improvements in peace. It can also help improve social factors, including governance and economic development as well as peace. It stands as one of the few holistic and empirical studies to identify the positive factors that create and sustain peaceful societies.

The Global Peace Index (GPI) is an inverted measure of peace, that is, scores close to one indicate lower levels of violence and scores close to five indicating greater levels of violence. To preserve consistency with the GPI, the PPI is also constructed such that lower scores indicate better socio-economic development, and higher scores indicate less development.

IEP takes a systems approach to peace, drawing on recent research into systems, especially societal systems. To construct the PPI, IEP analysed over 24,700 different data series, indices and attitudinal survey variables in conjunction with current thinking about the drivers of violent conflict, resilience and peacefulness.

The result is an eight-part taxonomy of the factors associated with peaceful societies. These eight areas, known as the Pillars of Positive Peace, were derived from the datasets that had the strongest correlation with internal peacefulness, as measured by the Global Peace Index. The PPI measures the eight Pillars using three indicators for each. The indicators represent the best available globally comparable data with the strongest statistically significant relationship to peace. The 24 indicators that make up the PPI are listed in Table 1.1.

TABLE 1.1
Indicators in the Positive Peace Index

The following 24 indicators have been selected in the Positive Peace Index by showing the strongest relationships with the absence of violence and the absence of fear of violence.

Pillar	Domain	Indicator	Description	Source	Correlation coefficient (to the GPI)
Acceptance of the Rights of Others	Attitudes	Gender Inequality	The Gender Inequality Index (GII) reflects women's disadvantage in three dimensions: reproductive health, political empowerment and the labor market.	United Nations Development Programme	0.71
	Attitudes	Group Grievance	The Group Grievance Indicator focuses on divisions and schisms between different groups in society – particularly divisions based on social or political characteristics – and their role in access to services or resources, and inclusion in the political process.	Fragile States Index	0.61
	Attitudes	Exclusion by Socio-Economic Group	Exclusion involves denying individuals access to services or participation in governed spaces based on their identity or belonging to a particular group.	Varieties of Democracy (V-Dem)	0.73
Equitable Distribution of Resources	Structures	Inequality-adjusted life expectancy index	Measures the overall life expectancy of a population accounting for the disparity between the average life expectancy of the rich and that of the poor. The smaller the difference the higher the equality and that reflects the equality of access to the health system.	United Nations Development Programme	0.61
	Institutions	Access to Public Services	Measures the discrepancies in access to public services distributed by socio-economic position.	Varieties of Democracy (V-Dem)	0.77
	Attitudes	Equality of Opportunity	Assesses whether individuals enjoy equality of opportunity and freedom from economic exploitation.	Freedom House	0.67
Free Flow of Information	Structures	Freedom of the Press	A composite measure of the degree of print, broadcast and internet freedom.	Reporters Without Borders (RSF)	0.50
	Attitudes	Quality of Information	Measured by Government dissemination of false information domestically: How often governments disseminate false or misleading information.	Varieties of Democracy (V-Dem)	0.61
	Structures	Individuals using the Internet (% of population)	Internet users are individuals who have used the Internet (from any location) in the last three months. The Internet can be used via a computer, mobile phone, personal digital assistant, games machine, digital TV etc.	International Telecommunication Union	0.64
Good Relations with Neighbours	Attitudes	Law to Support Equal Treatment of Population Segments	This is a measure of how population segments interrelate with their domestic neighbours. It assesses whether laws, policies, and practices guarantee equal treatment of various segments of the population.	Freedom House	0.68
	Structures	International Tourism	Number of tourists (Number of arrivals per 100,000 population) who travel to a country (staying at least one night) other than that in which they have their usual residence.	World Tourism Organization	0.43
	Institutions	External Intervention	The external intervention Indicator considers the influence and impact of external actors in the functioning - particularly security and economic - of a state.	Fragile States Index	0.70
High Levels of Human Capital	Structures	Share of youth not in employment, education, or training (NEET)	Proportion of people between 15 and 24 years of age that are not employed and are not in education or training.	International Labour Organization	0.60
	Structures	Researchers in R&D	The number of researchers engaged in Research & Development (R&D), expressed as per one million population.	UNESCO	0.65
	Structures	Healthy life expectancy (HALE)	Average number of years that a newborn can expect to live in full health.	World Health Organisation	0.66

Low Levels of Corruption	Institutions	Control of Corruption	Control of Corruption captures perceptions of the extent to which public power is exercised for private gain.	World Bank	0.78
	Attitudes	Factionalised Elites	Measures the fragmentation of ruling elites and state institutions along ethnic, class, clan, racial or religious lines.	Fragile States Index	0.70
	Institutions	Public Sector Theft	Assesses perceptions of how often public sector employees steal, embezzle, or misappropriate public funds or other state resources.	Varieties of Democracy (V-Dem)	0.70
Sound Business Environment	Institutions	Regulatory Quality	Captures perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development.	World Bank	0.76
	Institutions	Financial Institutions Index	Part of the financial development index, this indicator measures the quality of the financial institutions, including the depth of the financial sector and the access to financial products.	International Monetary Fund	0.54
	Structures	GDP per capita	GDP per capita (current US$) is gross domestic product divided by midyear population.	World Bank	0.61
Well-Functioning Government	Institutions	Government Openness and Transparency	Assesses to what extent the Government operations can be legally influenced by citizens and are open to scrutiny from society.	Freedom House	0.64
	Institutions	Government Effectiveness: Estimate	Government Effectiveness captures perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies.	World Bank	0.80
	Institutions	Rule of Law: Estimate	Rule of Law captures perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence.	World Bank	0.83

GLOBAL TRENDS
IN POSITIVE PEACE

The global score for the PPI has improved by two per cent since 2009, with 125 countries improving in Positive Peace, 37 countries deteriorating and one country score being little changed. The score is calculated by taking the average country score for the 163 countries included in the index.

Figure 1.1 highlights the global trend in Positive Peace. Changes in Positive Peace generally occur slowly and may take many years for the benefits to show because institution building and changes in social norms are long-term processes. As such, global changes in the PPI Pillars happen relatively slowly, and even slight changes in global Positive Peace can be considered important.

Positive Peace has improved almost continuously from 2009 until 2019, largely on the back of greater technological and economic development. The slight decline since 2019 was associated with COVID-19 and the global recession created by the policy responses to the pandemic.

Changes in Attitudes, Institutions and Structures

Although the progression of Positive Peace seems to be almost uniform from year to year, the changes for each of the three domains vary considerably. While *Structures* have improved by 7.5 per cent since 2009, *Attitudes* have deteriorated by more than two per cent since 2009. Institutions have slightly improved by around one per cent.

Table 1.1 classifies the 24 indicators in the PPI into one of these three domains using the following typology:

- *Attitudes* measure viewpoints and actions taken regarding the interactions and exchanges between individuals, groups, and the state.

- *Institutions* are associated with the functioning of the formal and informal organisations that manage and influence the socio-economic system.
- *Structures* are embedded in the framework of society, such as poverty and equality, or are the result of aggregate activity, such as GDP.

Using this classification, Figure 1.2 shows that the improvement in the PPI since 2009 is largely driven by structural improvements. Access to information, GDP per capita and life

Cumulative improvement in Positive Peace from 2009

By 2022, the global average Positive Peace score had improved by more than two per cent since 2009.
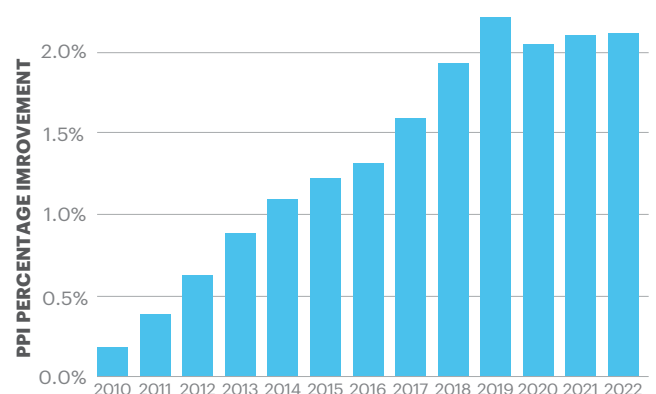
Source: IEP

Changes in the Attitudes, Institutions and Structures of Positive Peace, 2009–2022

The improvement in PPI since 2009 was largely driven by structural improvements globally. Institutional functioning has remained the same over the period while attitudes have deteriorated.
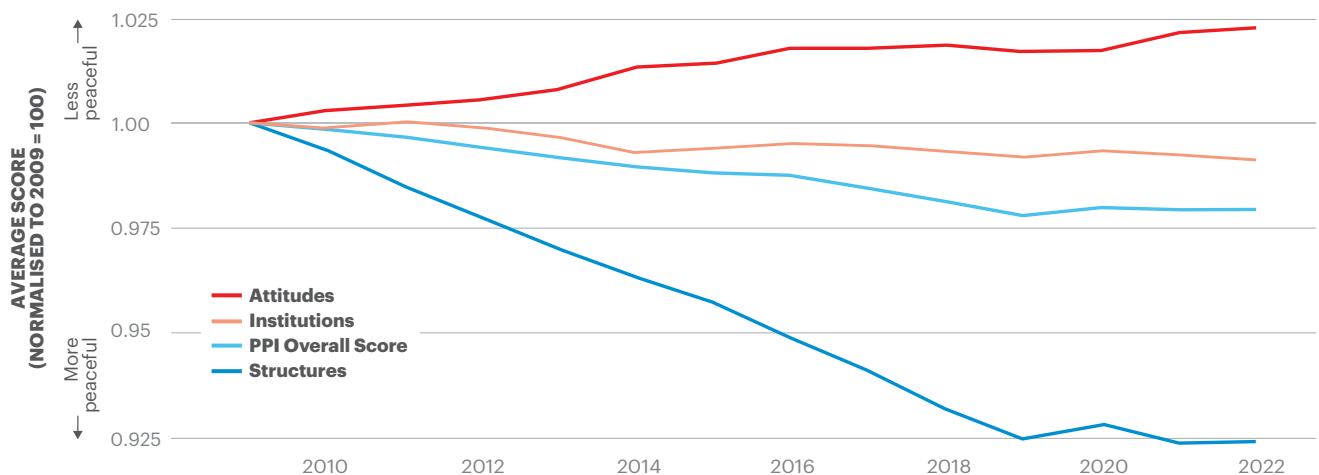
Source: IEP

expectancy have generally improved rapidly over the time window of analysis. Globally, institutional effectiveness has also improved over the past decade, albeit at a much slower pace than structural factors. However, the attitudinal indicators have been deteriorating over the period. The indicators showing the deepest deteriorations are *quality of information* and *factionalised elites*.

Changes in the Positive Peace Pillars

Figure 1.3 shows the percentage change from 2009 to 2022 for all eight Pillars of Positive Peace. These scores reflect gradual changes within complex social systems and typically do not fluctuate drastically year to year. As such, since 2009, the average Pillar score has changed by just 2.4 per cent, and except for *Free Flow of Information* no Pillar score has changed by more than five per cent. The slow-moving nature of Positive Peace calls for long-term planning and sustained investment to improve the Pillars.

Twelve out of the total 24 indicators used in the PPI recorded improvements from 2009 to 2022. This is just above half of the total number of indicators. However, the average improvement among indicators was of a greater quantum than the average deterioration. This led to an overall improvement in Positive Peace over the period.

The indicators that showed the most substantial improvements were those related to the *Structures* domain. Some examples are *individuals using the Internet*, *inequality-adjusted life expectancy* and *healthy life expectancy* (Figure 1.4). On the other hand, the *quality of information*, *factionalised elites* and *freedom of the press* indicators recorded the deepest deteriorations.

FIGURE 1.3

Changes in the Pillars of Positive Peace, 2009–2022

Seven of the eight Pillars have improved since 2009. *Low Levels of Corruption* deteriorated by around 1.8 per cent over the period.
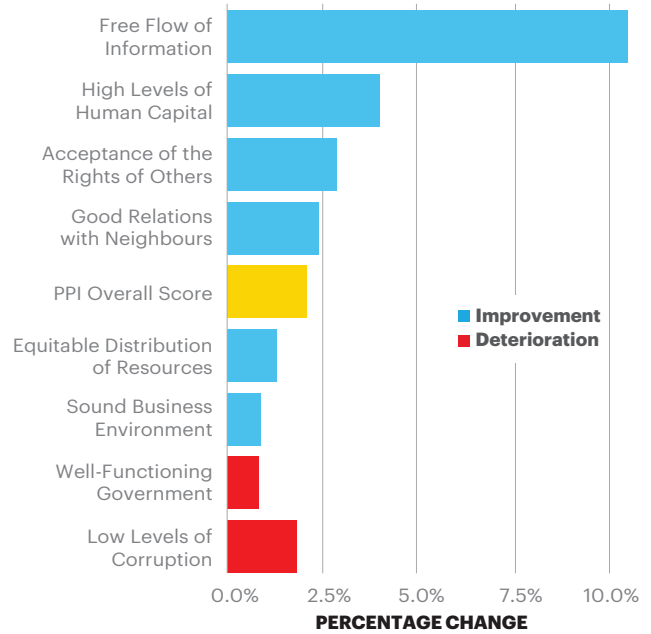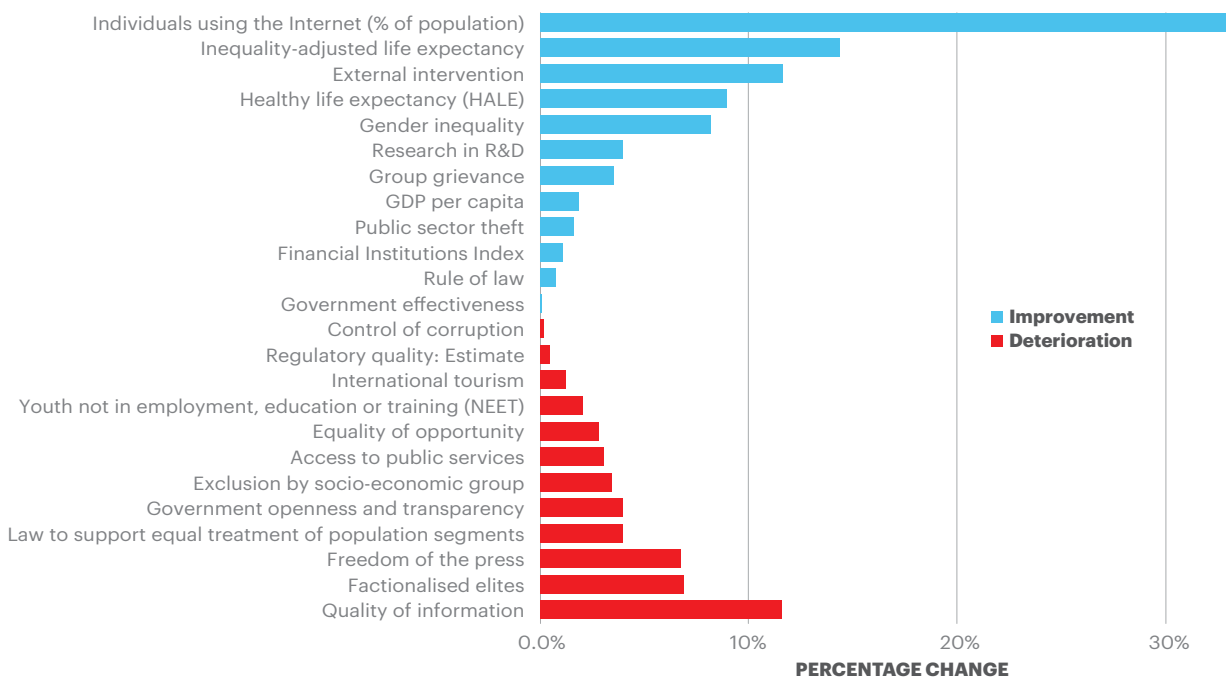

Source: IEP

FIGURE 1.4

Percentage change in PPI indicators, 2009–2022

Individuals using the Internet recorded the largest improvement while hostility to foreigners and quality of information recorded the largest deteriorations.

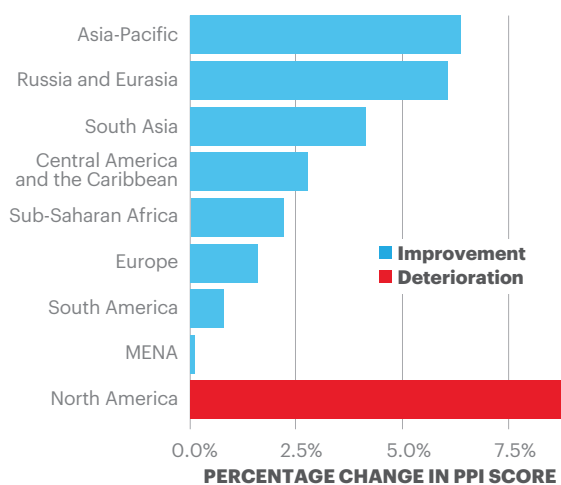Source: IEP

Regional Outcomes

All nine regions recorded improvements in their PPI scores since 2009, except for North America (Figure 1.5). The largest improvements occurred in Asia-Pacific, Russia and Eurasia, and South Asia, improving by 5.5 per cent, 5.2 per cent and 4.1 per cent respectively. The improvement in South Asia was mainly driven by improvements in Bhutan and Sri Lanka.

The improvement in MENA was marginal. Overall, 15 of the 20 countries that comprise this region improved in Positive Peace over the period. However, the deteriorations recorded by Libya, Syria, Yemen, Lebanon and Jordan were numerically large and almost offset the PPI gains elsewhere in the region.

The only region in the world to record a deterioration in its PPI score from 2009 to 2022 was North America, dropping by 8.6 per cent over the period. However, this region consists of only of two countries, Canada and the US, and as such, a greater variability in the average regional score is to be expected.

FIGURE 1.5

Change in average regional scores, 2009–2022

North America is the only region to record a deterioration in Positive Peace between 2009 and 2022.

Source: IEP

RISERS & FALLERS IN POSITIVE PEACE

Most of the countries in the PPI posted an improvement with 125 counties improving, compared to 37 that deteriorated between 2009 and 2022. The improvements can be attributed to improvements in the *Structures* domain, because of the rapid uptake of technology and increases in income. Almost 97 per cent of countries improved in this domain.

However, the *Attitudes* domain deteriorated by two per cent, while *Structures* improved by one per cent. Within the *Attitudes* domain, there were some troubling trends with *quality of information* and *factionalised elites* deteriorating by 6.9 per cent or more.

When looking at *Attitudes*, the proportion of nations that improved in this domain dropped to 39 per cent of the countries covered. The *Attitudes* indicator *quality of information* improved in only 27 per cent of countries and *factionalised elites* improved in only 19.6 per cent of the nations assessed. Two other indicators of the *Attitudes* domain, *equality of opportunity* and *exclusion by socio-economic group*, also deteriorated in the period. The deterioration in this domain is indicative of greater polarisation of the social and political debates and an increasing intolerance of dissenting views. There is also an increasing dissatisfaction with one's own standards of living.

Progress in Positive Peace materializes slowly. Countries may show little change in a single year, which means that Positive Peace changes should be investigated over longer periods of time. This is important as social changes tend to be long-lasting and self-perpetuating. This section presents the countries that have demonstrated the largest changes, positively or negatively, since 2009 (Figure 1.6). Note that a reduction in score indicates an improvement in Positive Peace.

The countries that experienced the largest improvements in PPI scores between 2009 and 2022 were Uzbekistan, Côte d'Ivoire, Georgia, Bhutan, and Armenia, each improving by at least eight per cent. Three of the most improved countries are from the Russia and Eurasia region and one is from sub-Saharan Africa.

Syria, Venezuela, Yemen, Libya, and South Sudan are the countries with the largest deteriorations. Three of the largest deteriorating countries are from MENA, one is from sub-Saharan Africa, and one is from South America.

FIGURE 1.6

Largest changes in Positive Peace, 2009–2022

Uzbekistan and Côte d'Ivoire recorded the largest improvements in Positive Peace, while Syria recorded the largest decline.
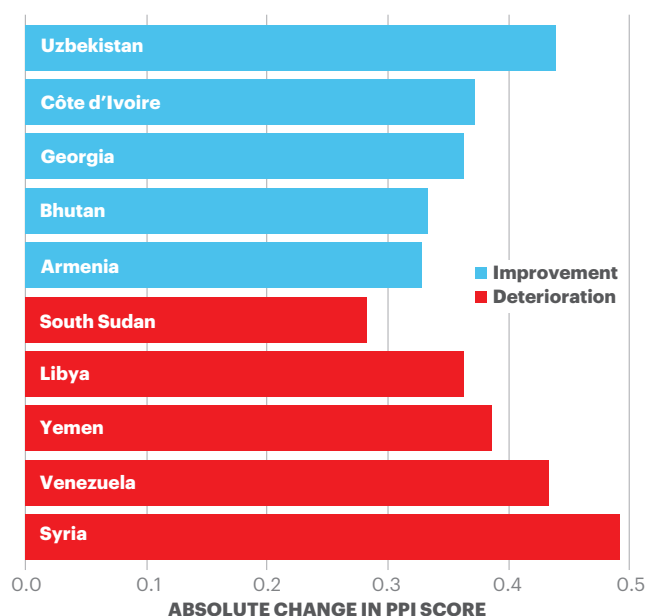
Source: IEP

PREDICTING FUTURE CHANGES IN PEACE

One important benefit of the Positive Peace framework is the probabilistic prediction of groups of countries more likely to experience substantial falls in peace. This section describes the Positive Peace deficit model, a framework based on systems thinking that examines countries according to their relative levels of peace and Positive Peace.

Of the 30 countries with large Positive Peace deficits in 2009, 80 per cent recorded deteriorations in the GPI over the 2009-2022 period. This model now has had seven iterations since the publication of the 2015 Positive Peace Report, with the accuracy of the model increasing over that period.

The four countries with the largest deficits in 2022 are Equatorial Guinea, Rwanda, Sierra Leone and Angola, and are the nations most likely to have falls in peace in the future. These are the nations most likely to have falls in peace in the future.

The Positive Peace Deficit as a Predictor of Violence

As a gauge of societal resilience, Positive Peace assesses nations' capacity to obtain and sustain high levels of peace, as measured by the GPI. In turn, high levels of peace create a socio-economic dividend that fosters development and promotes resilience. This systemic virtuous cycle is the main mechanism through which societies thrive.

Most nations operating with high levels of peacefulness will also enjoy high levels of Positive Peace. Thus, countries that rank well in the GPI tend to rank well in the PPI also. Those with low levels of peace according to the GPI on average will also display low levels of societal resilience as measured by Positive Peace. For this reason, when nations are assessed in terms of the GPI rankings versus their PPI rankings at a given point in time, most countries will feature near the diagonal line (Figure 1.7).

However, this is not always the case. Some nations may operate with a high level of peace but without the socio-economic development needed to sustain it. This manifests as a PPI rank that is materially inferior to the corresponding GPI rank. These nations are said to be in a Positive Peace deficit.
There are many reasons for a society to be in deficit. Some cultures are naturally pacific and conciliatory and may develop peaceful societies even in the absence of high levels of economic prosperity, education and technology. Nations such as Bhutan and Mauritius are possible examples for this category. However, this type of deficit is rare.

In most cases, deficits are the result of a state of peace being artificially maintained by a non-democratic regime. History shows that such situations are unstable, as peace obtained through forceful means tends be volatile. Additionally, many of these countries have weak institutions and are susceptible to outside interference, such as in the cases of Libya, Syria and Yemen. Suppression by force without socio-economic development simply smothers the underlying grievances, without truly resolving them. Most of the countries with the largest Positive Peace deficits in 2009 deteriorated into higher levels of violence by 2022 (Figure 1.7).

FIGURE 1.7

Positive Peace deficits and selectd changes in GPI, 2009–2022

Some of the countries with Positive Peace deficits in 2009 recorded large deteriorations in peace subsequently. The red arrows point towards the location of selected countries by 2022.
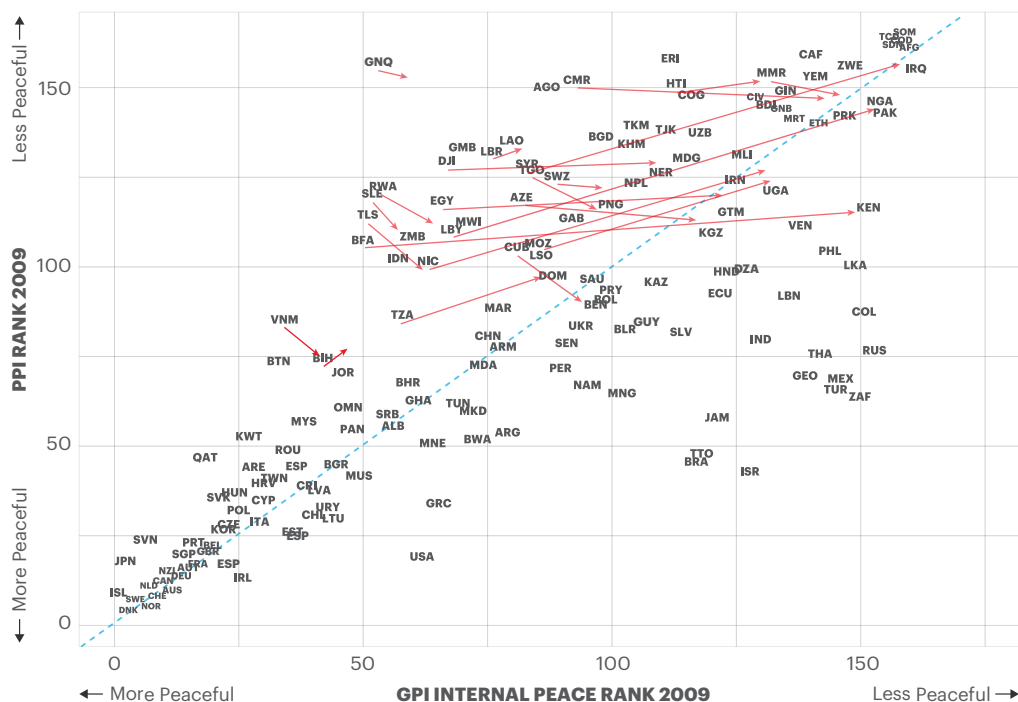
Source: IEP

The Positive Peace Deficit Model

Expanding on the previous section, countries can be grouped into three categories below.

- **Positive Peace Deficit**: when countries rank at least 20 places higher on the GPI than the PPI.
- **Positive Peace Surplus**: when countries rank at least 20 places lower on the GPI than the PPI.
- **Stable**: countries have a rank difference between the GPI and PPI of less than 20 places.

Of the 30 countries with large Positive Peace deficits in 2009, 24 nations had recorded deteriorations in the GPI Internal Peace Score by 2022 (Table 1.2). Many of the most extreme examples of collapse into violence over the past decade are countries such as Syria, Libya, Yemen, Nicaragua, Egypt, Burkina Faso and others – were deficit countries in 2009.

TABLE 1.2

Positive Peace deficits in 2009 and changes in GPI scores from 2009 to 2022

Of the top 30 nations in Positive Peace deficit in 2009, 24--or 80 per cent-- recorded deteriorations in peace in the subsequent decade.

Country	PPI Rank 2009 (A)	GPI Internal Peace Rank 2009 (B)	Positive Peace Deficit 2009 (A) – (B)	Change in GPI Internal Peace 2009-2022(%)	Change in GPI Internal Peace 2009-2022
Equatorial Guinea	155	53	102	3.1	Deterioration
Rwanda	120	54	66	6.1	Deterioration
Sierra Leone	118	52	66	3.4	Deterioration
Angola	148	87	61	4.2	Deterioration
Gambia	131	70	61	-5.7	Improvement
Timor-Leste	112	51	61	4.9	Deterioration
Djibouti	127	67	60	19.3	Deterioration
Cameroon	150	93	57	36	Deterioration
Burkina Faso	105	50	55	63	Deterioration
Liberia	130	76	54	7.5	Deterioration
Laos	133	80	53	-8.1	Improvement
Egypt	116	66	50	27.6	Deterioration
Vietnam	83	34	49	4.2	Deterioration
Zambia	106	60	46	6.8	Deterioration
Eritrea	156	112	44	-0.5	Improvement
Indonesia	100	57	43	0.4	Deterioration
Syria	126	83	43	61.2	Deterioration
Togo	125	84	41	7.6	Deterioration
Libya	108	68	40	60.4	Deterioration
Malawi	110	71	39	2.3	Deterioration
Bhutan	71	33	38	-12.3	Improvement
Bangladesh	134	98	36	1.4	Deterioration
Haiti	149	113	36	14.7	Deterioration
Nicaragua	99	63	36	38.5	Deterioration
Azerbaijan	117	82	35	16.2	Deterioration
Swaziland	123	89	34	6.7	Deterioration
Turkmenistan	137	106	31	0.9	Deterioration
Bosnia and Herzegovina	72	42	30	4	Deterioration
Republic of the Congo	146	116	30	-0.9	Improvement
Cambodia	132	104	28	-11.2	Improvement

Source: IEP

2 | Halo: a framework for analysing societal systems

This section is not aimed at explaining the philosophy behind systems theory. Rather it proposes a practical guide on how to analyse societal systems to provide decision makers with the necessary information on how the societal system functions. For background on IEP's philosophical approach to systems please refer to sections 'Systems Thinking' and 'What is Positive Peace' in the beginning of this report.

The results from implementing this systems design approach will allow for more informed policy decisions because before starting systemic interventions, a thorough understanding of the system is needed. This means that institutions can now be structured to match the needs of the system.

In most cases, governments, multilaterals and other institutions engaging in societal development initiatives do not address their initiatives systemically. This can create unforeseen consequences and lead to only partially successful outcomes, since there is not a wider understanding of the dynamics of that society. If institutions themselves are not set up systemically, often it will result in inefficiencies, partial solutions, inter-organisational disagreements and duplication, to name some of the issues.

There are many approaches to systems analysis, all with varying strengths and weaknesses. One that is commonly used in conflict analysis and business is Structures, Attitudes and Transactions (SAT), others are more suited to ecology, including the Social-Ecological Systems (SES) framework. There are many more.

What sets IEP's approach apart from other systems analysis methods is the multimodal approach and modularity, along with a bias towards data and an analysis framework borne out IEP's decade long research on Positive Peace and systems thinking. It is practical and based on real-world analysis. Since it is modular, it can be scaled according to the necessary level of sophistication, available data and knowledge of the participants. It is a sophisticated framework specifically designed for assessing societal systems. It can be applied for analysing a nation, a region or a small community.

Systems also evolve slowly over time; therefore, systems analysis can be used successfully and meaningfully again at future points in time. Analysis can be iteratively updated and additional complexity added, creating a living analysis.

The Halo approach has been designed as a set of building blocks. This allows for an adaptive approach that can be uniquely tailored based on many dependencies, including the size of the societal system and also the sophistication required in the analysis. Workshops and programs can be as short as two days or as long as one year using this building block approach. Different building blocks can be utilised depending on the strengths of the design team, what may suit the project best and the length of time allocated for the analysis.

This section is divided in two parts. The first describes each of the design components, or building blocks, that are called system attributes, along with examples. The second provides a process for using some of the attributes in a design and then how to bring them together to develop the understanding of the system. The example is comprised of a 14-step process, however more steps can be added or subtracted depending on need.

THE ATTRIBUTES OF A SYSTEM

What is the outcome you hope to achieve? A system can be understood from many different perspectives; however, the starting point is what you wish to achieve from the analysis. For example, if the aim was to improve family planning or the containment of terrorism within the same social system, the knowledge needed and the approach taken would be very different even though many of the components and dynamics of the system may be the same.

The attributes contained below have varying amounts of text. Many of the more important attributes have short explanations due to the simplicity of the concepts. Additionally, the aim was to keep the text concise as many of the systems concepts are more fully explained in Section 1 of this report.

Define the Bounds of the System

Systems have boundaries. These boundaries can be described according to a geographic area or social grouping. For example, a system can be defined by a geographic area, such as a nation, state or a forest. These types of geographic boundaries are the easiest to define. It is more difficult if the system is an ethnic group or a societal function. Social functions include the education system, military, policing or a local health system. It is best to approach these as simplistically as possible at first. Some questions that help are what are the sub-systems which lie within the system. What are the legal frameworks affecting the system? For example, the health system consists of hospitals, doctors, pharmacists, government health departments, psychologists, etc. For the analysis, it may not consist of alternative medicines, aged care homes or psychic healers. Sometimes it is helpful to stipulate what is not included in a system to simplify the analysis.

Often relations and flows can be confused as systems, for example a conflict is an exchange between two or more systemic groups. A conflict is not a social system, but a series of relationships and flows between systems.

What are the Sub-Systems Contained within a System?

Systems do not exist in a vacuum, as they form parts of larger systems. For example, states are systems that form part of a larger national system. However, they are also comprised of systems, such as education, policing, business associations and others. Identifying the core systems, or sub-systems, within a greater system provides the basis for understanding its dynamics.

What Are the Other Major Systems It Interacts with?

Systems interact with other systems. This could be an adjacent country, or district. It could be another ethnic group or an area of governance. For instance, the military, the police, the judiciary and border control can all be seen as systems that interact with one another to achieve a certain objective. Another example could be a school which interacts with families, the education department and local leaders to improve literacy rates in a community.

What is the Intent of the System?

The intent of a system is its willing pursuit of desired outputs or states. For example, the intent of a school system is to provide pupils with the best possible education through the most efficient use of resources. If the system of analysis is a social group occupying a geographic area, its intent may be to control the area, stop outsiders from accessing it and maximise the use of that area. There can be multiple intents in the same system. Attempting to rank the intents is important to understand the priorities within the system. It is also critical to differentiate between actual intent and stated or idealised intent, as the two often differ substantially.

What Measurements Exist for the System?

Where accurate and consistent data is available, a system may be characterised by a set of statistical indicators that could constitute the foundation for a deeper analysis. However, it is often the case that statistical data for the specific system or sub-system is not produced and the analysis needs to be conducted indirectly through proxy data or via qualitative or subject matter expert assessments. IEP uses three different approaches when the data is insufficient, which are described later in this section.

IEP has curated a set of approximately 400 indicators grouped by specific systemic areas based around Positive Peace to assess the level of societal resilience and development in a nation. These indicators can also be compared across similar or neighbouring countries, states or communities to provide a deeper insight. They can be broken down further and can grouped under IEP's Positive Peace framework to better analyse the strengths and weaknesses of the overall system. Figure 3.1 shows that Zimbabwe recorded improvements in 13 of the 19 indicators of governance performance over the past decade. However, the country's performance remains inferior to that of its sub-Saharan African neighbours in many of these indicators, despite such improvements.

This type of statistical analysis can measure, directly or indirectly, the dynamics of sectoral components of the systems and the exchanges, or flows, between them.

Understanding the Importance of Sub-Systems

To determine the importance of a system, consider the number of people within it, the number of people affected by the system, the amount of money revolving within it, the number of relationships or the extent of the laws or regulations prevailing in or governing the system.
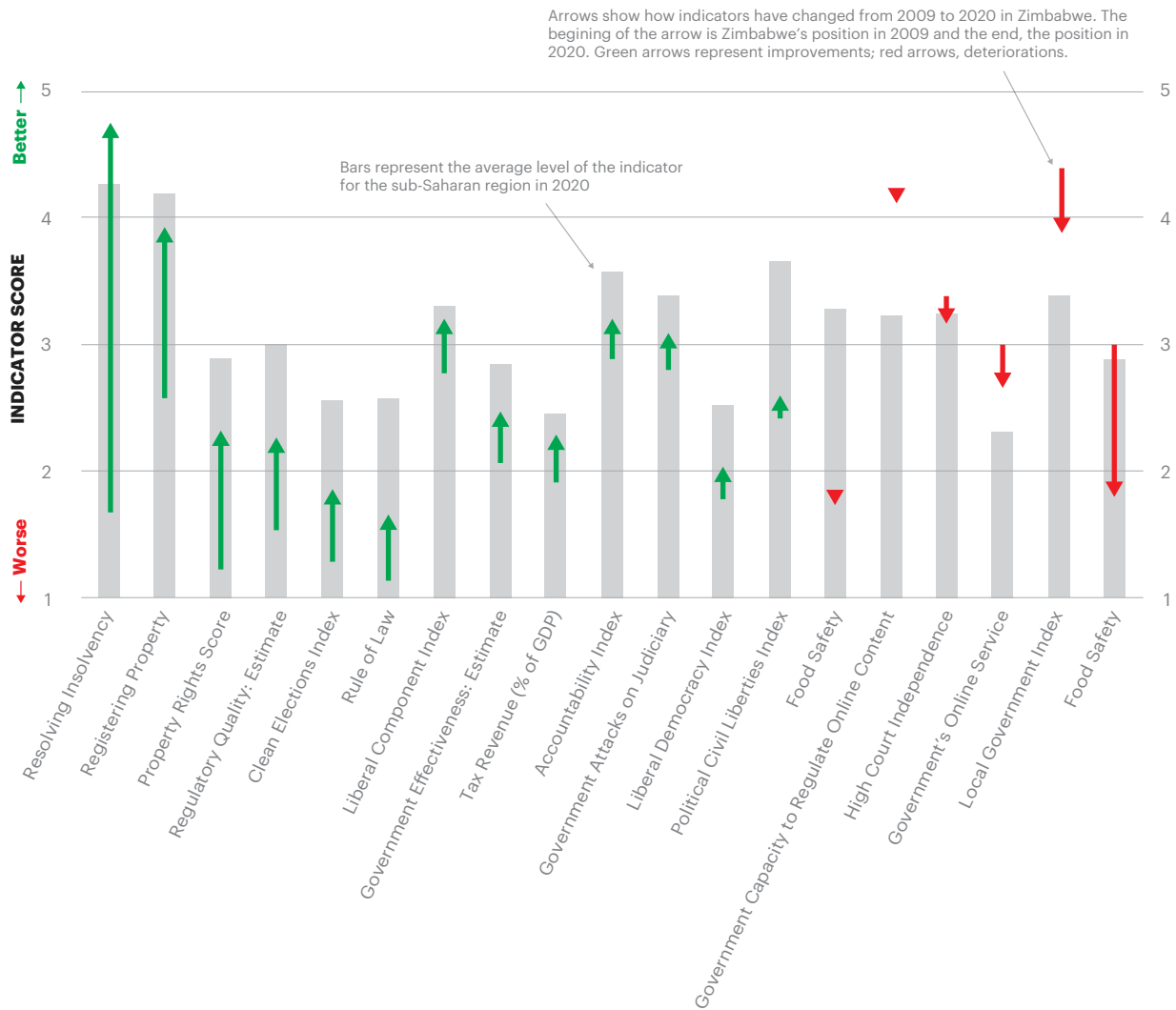
What is the Direction or Momentum of the System?

Momentum is important as it helps explain the changing dynamics of the system or sub-system, including emergence, runaway feedback loops, decay and positive functions. The data can be assessed individually or grouped. By grouping the data, the momentum of the overall system or sub-system can be ascertained.

FIGURE 2.1

Example of changes in governance indicators, Zimbabwe and sub-Saharan Africa, 2009–2020

Zimbabwe has improved on many governance indicators over the past decade. However, the country remains less developed than its sub-Saharan African neighbours in many areas.

Arrows show how indicators have changed from 2009 to 2020 in Zimbabwe. The begining of the arrow is Zimbabwe's position in 2009 and the end, the position in 2020. Green arrows represent improvements; red arrows, deteriorations.

Bars represent the average level of the indicator for the sub-Saharan region in 2020

Source: IEP

It is also beneficial to compare the measures to the system's neighbours'. This gives insight into the relative strengths and weaknesses as neighbouring systems are often similar.

Momentum is an important concept for systems analysis because it facilitates the extrapolation or forecasting of future states the system may find itself in. If those states are undesirable – according to the intent of the system – interventions should be designed to slow down and possibly invert the system's momentum in that area. Where the extrapolated future state is desirable, programs can be developed to reinforce a specific momentum and take advantage of it to nudge other sub-systems into higher states of development.

The example of Figure 3.1 shows an improvement in the momentum in the Zimbabwean governance system in regards to government effectiveness and government accountability over the past decade. If this momentum is preserved, Zimbabwe may reach levels of effectiveness in these indicators on par with its sub-Saharan African neighbours. However, the country has recorded a sharp deterioration in institutions' ability to provide

food security for the population since 2009, with food insecurity now being more severe than among neighbours. This is a critical area that should be prioritised in any resilience building programme for the country.

What is the Path of the System and its Dependencies?
Systems are path dependent. This means that the way a system will develop in the future from a given state depends on the path taken to reach that state. Path dependency can be understood as the influence that a social system's history, memory and cultural values exert on the future development of that society. These influences are expressed in the encoded norms within the system.

Define the Homeostasis States
All systems seek a steady state, which is a state of minimal change in the system's components, stocks and flows. In the same way the human body seeks to maintain a core temperature, societal systems also seek stability. Comprehending the main processes – encoded norms – which maintain the steady state are at the crux of understanding how a system operates. However, systems do have a tendency to

grow. The steady state can be one in which the system achieves growth, or one in which the system stagnates. This can vary by sub-system.

What are the Main Encoded Norms within the System?

Isolating the main encoded norms within a system and the bounds within which they operate provides an understanding of the mechanisms that hold the system together. The encoded norms can sometimes be very subtle and difficult to quantify and therefore the analysis has to focus on the important ones. They can be expressed through laws and cultural norms, rules or regulations, either formal or informal.

What Type of Feedback Loops Are Occurring?

There are two main types of feedback loops – reinforcing and balancing. Reinforcing feedback loops continue to amplify the effect of the input. A reinforcing feedback loop might include population growth or economic subsidies. When such feedback mechanisms are too strong, they become runaway feedback loops and may completely destabilise the system.

Balancing feedback loops are those in which the outputs mitigate the effect of the inputs. They keep the system in balance and support the steady state.

Has the System Passed any Tipping Points?

This is important in understanding the path trajectory of the system. Tipping points are thresholds beyond which the relationships between components of a system change abruptly. It is hard to predict the timing of them in the future, however, they can be seen in the past. They may have been positive, when they lead to higher levels of societal resilience, or negative. A tipping point refers to a permanent and irreversible change in the state of a system. Identifying past tipping points might give insight into the dynamics which created the current system. Identifying the exact timing when a system may go through a future tipping point is extremely difficult, therefore understanding past system tipping points from its history is the best approach.

How Resilient and Adaptable is the System?

There are two methods for measuring resilience and adaptability. The first is an analysis of past shocks that the system has suffered and the speed with which the system recovered back to a steady state. The second is a data driven approach based around the Positive Peace framework which is an accurate measure of resilience. Societies with greater resilience will more easily absorb the effects of shocks and recover more quickly in their aftermath.

Efficiency and Redundancy

Efficiency means that a system produces a maximum output with the minimum number of components and with the lowest level of resources. Redundancy means a system has excess capacity, or not fully used components or resources. In most cases, efficiency and redundancy are antagonistic concepts.

Efficient systems produce the highest level of output with the minimum costs and use of resources. However, if a component or sub-system is stressed or fails, the lack of alternate paths or capacity means the system may become disabled. Building redundancies in a system reduces the expected losses from failures. However, this comes at a cost to efficiency. Systems with redundancies tend to be those with the highest levels of resilience, as they are capable of absorbing shocks. However, too much redundancy may mean the system is uncompetitive.

Redundancies can be constructed in two different ways. Redundancy of components means the system has unused, or only partially used, components. For example, a factory may operate with two computers instead of one – if one breaks down the other takes over, thereby creating a failsafe environment. Another example is an over-capacity in the health system to deal with any spikes in hospitalisation rates.

Redundancy of relationships takes place when two or more components are linked by a larger number of connections than strictly necessary. An example is when two cities are interconnected through various highways instead of just one.

Follow the Money

Money flows within a system often give an idea of the size of sub-systems or the importance of encoded norms. If the amount of money is growing over time, the system may be in a virtuous cycle of development. Conversely, rising monetary power may also be an indication of an imbalance. An example would be if industry or special interest groups are subsidised by the tax payer, which enhances their ability to garner political influence with which to secure additional government money and concessions.

Function, Purpose and Potential

All components of a system can be seen through these three lenses – function, purpose and potential. All purposes in systems have functions and functions also have potential.

The function of a system or sub-system is the set of activities through which output is produced. The purpose of the system can be seen as similar to intent, however, intent is best applied to the overall system, while purpose is better applied to sub-systems. A sub-system can have multiple purposes but the best analytical approach is to focus on the most important purpose or purposes.

Potential describes what the function could be if the component had more resources or its purpose was modified.

For example, a department that collects data on crime for the government has the function of collecting, compiling and divulging crime data. Its purpose is to inform policing and the allocation of the security budget. Its potential may lie in collecting additional data, operating with an increased budget to promote its findings or to communicate directly with the population to improve crime awareness.

Causality in Systems

This is really about being able to understand the influences that lead the system to behave in certain ways. However, in systems cause and effect can become entwined. Think of a mutual feedback loop.

Different parts, events or trends can mutually influence one another, such that the differentiation between cause and effect loses usefulness. This way of thinking avoids the pitfalls and failures of the old cause/effect approach whereby an intervention is targeted at the presumed cause of a problem or

vulnerability. Understanding mutual causality leads to a deeper perspective on agency, feedback loops, connections and relationships, which are all fundamental parts of systems mapping.

Non-Linearity of Effects

The effect of one part of a system on another is not always linear. Relationships may change depending on the state of development of the system. For example, for low peace countries, improvements in peace lead to small increases in worker productivity. However, as countries progress in peace, further reductions in violence lead to ever higher increases in worker productivity. This non-linear relationship has been discussed in IEP's Business and Peace Report 2021.[1]

Emergent Properties

A system evolves through time and its current properties may not fully describe future dynamics. Finding new emerging properties is important to understand where the system is heading. The speed with which something is accelerating can help identify emergence. This can be the increase in money, the number of people employed or the rate of development of new technologies.

Stocks, Flows and Transformations

A stock is a metric that defines the state of a component, a sub-system or a system. Examples of stocks could be the number of people in a country, the balance in a bank account, the amount of grain in storage or the number of persons incarcerated. Flows are movements between stocks. Examples could be money transfers, the movement of a prisoner to the workforce or immigrants entering the system. These concepts are important in understanding the dynamics of systems.

Stocks and flows are homogeneous. That means what is stocked or what is flowing remains the same across time. For instance, money can be stored in a safe or be transacted between persons, without losing or changing its attributes.

However, a transformation changes the nature of the object, service or resource within the system over a given period of time. For example, materials and electricity flow into a factory to produce a machine. Another example is people and knowledge in a research institute creating new forms of knowledge, while a stock of food may rot and become unusable even if there has been no outflow from the storage.

Is the System Stuck in an Attractor Plain?

An attractor plain is a context or state from which the system finds it difficult to escape. Within the peace and conflict arena, the analysis of actual peace, as measured through the GPI, and Positive Peace has identified two attractor plains, as discussed in Section 2 of this report. One is called Sustainable Peace and is the state where countries have high rankings in both the GPI and the PPI. None of the countries in the Sustainable Peace area of the GPI x PPI phase plain have had a substantial fall in their levels of peace in the 15 years of the GPI. These countries tend to remain peaceful without falling into states of violence as a consequence of shocks. The other attractor plain is the Conflict Trap, defined as low rankings in both the GPI and the PPI. Countries in this plain, find it difficult to improve their societal resilience because of the losses incurred by high levels of violence. Conversely, without resilience they cannot achieve higher states of peacefulness. Nations in the Conflict Trap region find it difficult to exit this region without external assistance.

Archetypes

Archetypes are common reinforcing themes or patterns of interactions repeated in many systems. The number of archetypes varies depending on who is defining them, but generally there are seven to ten. Examples are 'limits to growth', 'seeking the wrong goals' and 'exponential success'. The value in identifying the archetypes in a system is that it short-cuts the analysis and helps in identifying solutions which are applicable for the specific archetype. A number of specific archetypes are defined in the following section on performing a societal systems analysis.

Static and Dynamic modelling

Static modelling analyses the system at a given point in time, while dynamic modelling uses many iterations of data over a period of time. Static models are useful where there isn't sufficient time series data for analysis. It is also useful to provide a snapshot early in the analysis that is simpler and easier to understand before building up the dynamics.

Analysis through Positive Peace

Positive Peace has been derived empirically to provide a holistic expression of a system and as such it can be used in this process as a check on whether the system has been analysed systemically. Once a model has been derived, each component can be classified as belonging to a Pillar of Positive Peace. If the analysis is weak in a particular Pillar or Pillars, then there may be a flaw in the analysis or a vulnerability in the social system itself.

Positive Peace can also be used as a method of analysis to better understand the various sub-systems, stocks, flows and emergent qualities of the system as explained earlier in the aforementioned heading 'What Measurements Exist for the System?'

APPROACHES TO ANALYSING THE ATTRIBUTES OF SYSTEMS

Analysing systems can be lengthy, resource intensive and expensive. One of the most critical difficulties in the process is the lack of comprehensive information on the state and dynamics of a system. Therefore, it is important to understand the scope of the work that the research team can undertake and the limitations they face. Arguably the best approach is to start with the simplest depiction of a system and progressively build its complexity.

An example of how to perform an analysis is set out below. This has been done for purely illustrative purposes. However, it does demonstrate the way the attributes come together to form a sophisticated analytical framework and the way the attributes can be used in combination.

Given the complexity and the number of choices of analytical tools presented above the approach adopted in this analysis is to focus on the most important concepts and how they could be analysed and pulled together. The major steps used in this analysis are:

- Describing the system and the sub-systems contained within it.
- Ascertaining the system's intent.
- Gauging stocks and flows.
- Finding encoded norms.
- Mapping path dependencies.
- Determining emergent properties.

Note, this analysis only uses eight of the 24 attributes listed above.

A schematic of the steps taken in performing this analysis is presented at the end of this section.

Developing a project plan is the preparatory step. Think through which of the system attributes will be used and to what end. It is important to understand why the analysis is being done and what the outcome will be used for. It is good to do a number of iterations of the analysis, deepening the depth each time. As a rough guide, it is useful to cover in the first third of a project all the selected attributes. That will result in at least a fuzzy view of the system. It will also provide an opportunity to understand where additional focus is needed on the next iteration to build the model out.

If the budget and timeframe allow for the development of new datasets, for example surveys on people's values, then generally undertaking them after the first pass through the methodology is the best approach. However, in some cases if there is limited data available surveying may be helpful before starting. Also if the timeline is short it may not allow the necessary time to complete a mid-project survey.

There are basically four approaches in this framework for analysing the attributes of a system.

- Data driven.
- Expert assessment.
- Deliberative forums.
- Survey data.

Generally, to analyse a system all four styles can be used. The utility of each approach will be dependent on the coverage and quality of the available data and the availability of funds for the study. Obviously, undertaking new surveys can be expensive and the extent to which deliberative forums are used will also impact budgets.

Deliberative forums are created by bringing together a group people who represent a community to help guide a decision about a project or issue that affects them. They form a deliberative panel, also similar to citizen juries, community meetings, and consensus conferences. They are usually formed around a specific issue, and will attend presentations from experts and make recommendations, based on the expert input and the discussions within the group. The experts are not involved in forming the recommendations.

Some of the steps below are discussed more succinctly than others. However, all steps are important in this analysis.

Step 1 – Defining the System and its Bounds
The first step is to define the boundaries of the system to be researched for the problem at hand. This can be done through defining a geographic area or a social grouping. In this sense a social grouping could be a formal body such as an education system, or a monetary system, such as a card payment system. Countries, states and administrative districts are good to use, if applicable, as their bounds are clearly defined, as well as their administrative processes and laws. The boundaries of a system can be detected through different approaches such as geographical areas, coverage of legal instruments, expert opinion and ethnicity or religion. Some of these concepts are clarified in the following examples.

1. A country's health sector is a system whose boundaries can be relatively clearly defined through an enumeration of its components, or sub-systems: the set of medical doctors, hospitals, the ambulance service, the national health budget etc. Excluding certain sub-systems is also an important in describing the bounds of a system. For example, can the police department be considered part of the health system? One key purpose of the police is to prevent violent crimes, and as such, effective policing reduces hospital admissions. However, police departments are covered by different legislative, budgetary and administrative frameworks than the health sector. Therefore, instead of characterising the police department as a sub-system of the health system, it would be more precise to think of it as a parallel system interacting closely with the health sector.

2. The natural environment is clearly a system in which

components and sub-systems interact in complex ways. The simplest way to define the bounds of the system is to define the physical boundaries of the ecosystem. For example, a forest has more or less clearly defined geographical boundaries which set the limits of that system in broad terms. However, it may also contain rivers flowing through it that originate far afield and its atmosphere – or its vertical upper boundary – is also affected by other systems.

3. The legal system can be characterised by large and complex sub-systems such as the legislative, the judiciary, law enforcement, law colleges and others. However, a particular legal instrument or a specific law is not a component of the legal system. Rather, it is an encoded norm, that is, a rule governing the function of a system or sub-system. For example, the law governing the manufacture of seat belts is an encoded norm in the car industry.

Step 2 – What are the Major Sub-Systems?

Once the boundaries of the system have been defined, it is important to consider the sub-systems that exist within the system. It is not necessary to consider every possible sub-system as there will frequently be many but it is important to understand the most influential sub-systems. They can be determined by the same approaches used to identify a system. As the analysis progresses often subsystems become apparent which were missed on the initial passes. Stocks, flows and the available data are some of the items that can give insight into subsystems.

Step 3 – What is the Intent of the System

Often the intent of the system is clear, but also the actions might not accurately reflect the intent. For example, there may be a school improvement plan, where money is given for the capital improvements on the neediest schools. However, if the decision is made by politicians then the allocation may be made to schools with the most political relevance rather than to the neediest schools. It is clear that the intents and the outcome are not aligned.

There may also be multiple intents. One approach is to assess the system on four different dimensions of activity – economic, political, social and legal.

Economically, intent may be assessed by the type of system, ranging from state controlled to free market. This can be expressed in the nature and scope of the laws governing economic activity and state ownership of enterprises. A company's intent may be expressed by its desire to maximise growth or profit. The stated intent of many systems or sub-systems can be self-evident. However, they can be compromised, for example if the staff in the health or policing systems needed facility payments from the public to maintain a living wage then one of the actual primary intents would be to raise income, despite the stated intent being to provide quality service.

There are two other analytic methods that help in understanding intent. The first is using expert assessment and the second is to use a deliberative forum. The latter is comprised of people who are part of the system. They often know the way the system functions and can give insight into its non-obvious intents, but they are not necessarily subject matter experts. If it was the criminal justice system then it would not only involve police, judges, lawyers, but also people affected by crime, general public, criminals and others that the policing function touches.

In some cases, the stated intent of a society may differ from the actual intent.

The Positive Peace Report 2017 contains an exercise where nations are assessed according to their beliefs and values in four dimensions: political, economic, international relations and social policy.[2] Nations were assessed according to a linear scale in each of these dimensions. For example, along the political linear scale, nations could be considered authoritarian on one extreme to democratic on the other extreme, with several gradations occurring between these levels (Figure 3.2). The combination of a nation's assessment in these four dimensions provided an approximation for the national intent. This approximation could then be fine tuned and enriched by expert analysis. This national intent tool can be accessed at nationalintent.visionofhumanity.org.

FIGURE 2.2
Plotting country intent

Intent for each country can be classified based on the country's position on the four scales of intent.
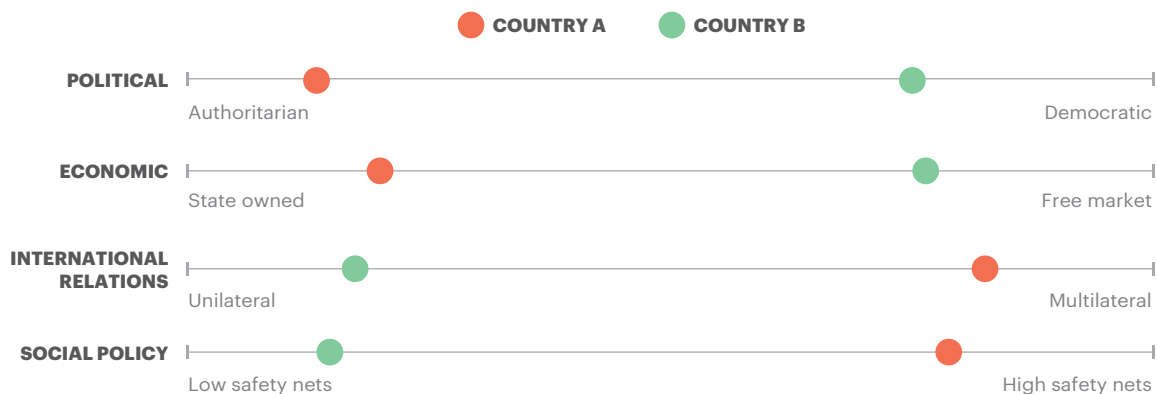
Source: IEP

Step 4 - What is the Purpose, Function and Potential of the Sub-System
The next step is to define the purpose of each sub-system, how it functions and its potential. This process needs to be concise, because lengthy and detailed descriptions can confuse the analysis without providing any substantial informational gain. It is best to use bullet points to describe the purpose and the function.

There may be more than one purpose, but it is important to focus on the essentials and not over-describe. Examples may be a community cooperative whose purpose is to maintain a seed and fertilizer bank for its members to avoid steep changes in prices. It may contain ten or more functions related to purchasing, selling or distributing its stocks. Its potential may lie in building new purposes and functions, such as the collective sale of food, improving water sources or setting up a small-scale canning business.

Potential is often best assessed after the stocks and flows in the system have been determined.

Note that potential can also be 'negative', or more precisely, lower than the current state of its function. This could happen, for example, where a system is scaling down due to competition, obsolescence, legal impositions or regulatory action.

**Step 5 – What are the Stocks, Flows and Transformations within the System**
The next step is to develop the stocks and flows associated with the functions of the sub-systems. Stocks can accumulate or be depleted; flows can strengthen, weaken or reverse.

The objective is to map the interrelations between the different sub-systems. The relationship between the stocks and flows of sub-systems will show how they relate to each other. Again use

FIGURE 2.3
Example using data nesting - Education department system

The listing of all stocks, flows and transformations within a system is a critical step towards understanding the dynamics of the system.
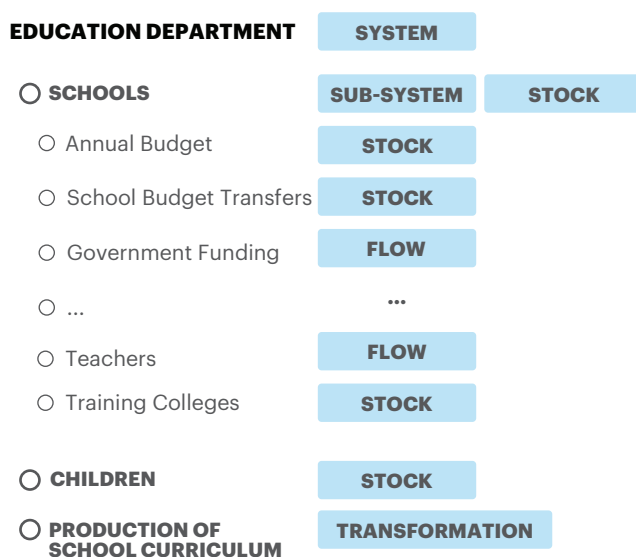
Source: IEP

simple bullet points to define the stocks, what flows into it and what flows out (Figure 3.3). Also map any transformations that happen inside the sub-system. For example, materials can be transformed into a final product within a manufacturing plant or criminals rehabilitated through the criminal justice system. It is also good to rank the importance of each function. The number of people involved, the amount of money transferred or the depth of the laws surrounding an activity can provide a strong indication of importance.

This approach can be data driven based on available statistics. It may be the way government funding passes to and through organisations, it could be the rise and fall in the stock levels or prices of important commodities or it could be the number of people employed in the hospitality sector.

The determination of stocks and flows will begin to shed light on the inefficiencies, constraints and bottlenecks in the system. The extent of these redundancies and limitations will become clearer when the analysis reaches step 13.

While stocks, flows and transformations can be ascertained by expert assessment, if data exists, a quantitative analysis is preferable.

Transformations occur when one or more flows enter a sub-system and their nature is changed within the sub-system. Manufacturing is an obvious example, however, other examples could be a theater company where money, people, costumes are transformed into a play; or a forestry regeneration program where money, people, knowledge, plants are transformed into ecological capital or multiple flows into a hospital where the transformation is improved health.

Some stocks and flows are more important than others. A simple approach is to assign a value of importance. The scale does not matter, provided it is large enough to cover important variances in observed stocks and flows. This data can then be entered into a database. This will provide the ability for a sophisticated analysis further down the track and also allow for the visualisation of the data. There are many database types including relational, graph or Kumu which is specifically designed for social networks.[3]

These relationships between stocks and flows within and between sub-systems are usually 'one to many'.

Step 6 – Finding the Encoded Norms
Understanding the stocks and flows will allow for the elucidation of the encoded norms. Encoded norms refer to the accepted actions, rules, regulations and cultural norms within a sub-system. For example, one encoded norm would be to purchase goods if the inventory dropped below a certain level, while another would be to change suppliers, if specific thresholds were met. Identifying the encoded norms may be the most difficult part of the process, as they are seldom clearly defined. In these cases, expert assessments are useful and deliberative assemblies are particularly helpful in the elucidation of cultural norms. It is usually best to start with what appears as the simplest areas to define.

Understanding the encoded norms requires the comprehension of purpose and intent.

Encoded norms regulate the flows between stocks, but can also be cultural values such as employment norms regarding levels of wages and work safety or discriminatory behaviour. While most encoded norms change slowly, those that arise from laws and regulations can change very rapidly in response to legal reform or new executive directives.

Step 7 – Developing System Diagrams
System dynamics can be very complex and it can be difficult to consider all relevant aspects. Visualising information can make it significantly easier to gain insights into the dynamics and obtain a more holistic perspective. There are a number of different approaches. These include cluster maps and interconnection maps.

Cluster maps are basically free-form association of what a group of people thinks a system may be. It is a qualitative exercise involving a small group of three to five people providing insight. The aim is to generate the cluster map quickly, within a couple of hours to provide a sanity check on what has been defined in the prior steps. This is best characterised as a 'brain dump' rather than an analytical exercise.

Interconnection maps take the data assembled and create lines reflecting the relationships between each different bubble. The bubbles can represent functions, sub-systems or purposes. The size of the bubble represents the importance of the stock/part and the thickness of the line represents the strength of the flow/interconnection. Figure 3.4 is a very simple example these types of maps, which could have hundreds of items and arrows.

Step 8 – Performing a Static Analysis
Often a good start is to analyse the system at one point in time. This provides for a simpler understanding of the system.

The use of network maps as described above is appropriate for static analysis, as such maps are two-dimensional representations with some three dimensional elements. For example, if the size of the box is bigger or the colour darker or the lines thicker, that may represent greater importance or influence or quality.

Once this analysis is complete, various relationships will become more apparent.

Step 9 – Performing a Dynamic Analysis
Once a static analysis has been performed, it can then be extended to a dynamic analysis for a deeper understanding of how the system changes over time. This is important because systems are dynamic, so the data will change over time. Therefore, time series are important in understanding the changes in the flows over time. Which stocks are increasing, which stocks are decreasing and which ones are static. This part of the analysis is useful for determining existing and emerging constraints in the system.

This also provides the ability to look for emergent qualities. These are stocks, flows or sub-systems that are growing in size. Sun-setting is the opposite of emergence and is typically something that is fading away; this is where stocks or flows are dwindling. This may be due to obsolescence, malfunction within the system, innovation and other factors.

FIGURE 2.4
Grain subsidy program
Stocks and flows in a grain subsidy program.
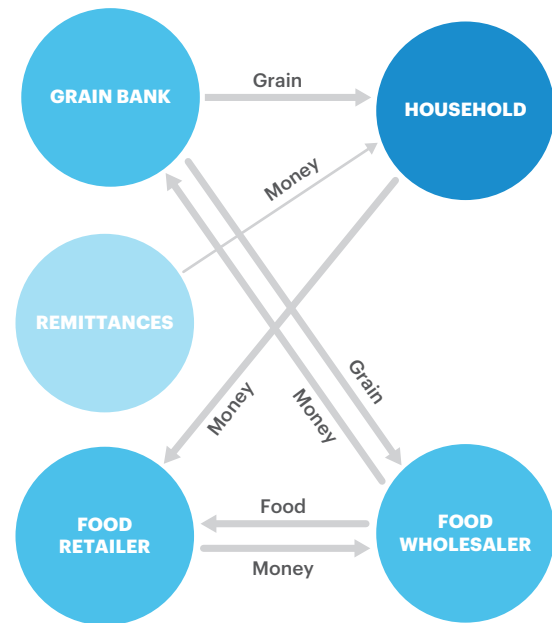
Source: IEP

This will give some clear insights into the dynamics of the system. There may be factors that need to change, due to innovation or other drivers. Sun-setting may be good or bad depending on the circumstances. For example, if the role of local leaders is declining in a pastoralist community and the government agencies that are now dispensing justice are not respected or seen as legitimate, then this can lead to further deteriorations in the system. Alternately, if the number of people who are under-nourished is falling then that is positive.

Where factors are increasing and this increase comes off a low base, this is an emerging quality within the system. This again may be good or bad. If the levels of terrorism or civil unrest are rising then it is bad, but in the case of increased use of the Internet, more teachers per student or increases in per capita income then it is good.

Sun-setting may also occur. This is where a measure of a stock or flow is falling over time. This may be due to innovation, such as electric cars replacing traditional cars or the Internet replacing earlier forms of communication.

Step 10 – Identify the System Archetypes
There are some basic patterns that keep emerging in different systems. These are often referred to as archetypes. Analysing a system from the concept of basic archetypes helps to better understand common themes and important feedback loops. Six common archetypes are listed below.

- *Limits to growth.* All systems have limited resources they can consume.
- *Exponential success.* This is a runaway feedback loop where success increases exponentially, eventually dominating the system.

- *Seeking the wrong goal*. This is related to the intent of the system. If the goal is inadequate, its pursuit will damage the system.
- *Rule breaking*. Rules are often set up to regulate and maintain homeostasis. When rules which regulate society break down the result will be changes in the system's internal structure. This can be positive but more often is destructive.
- *Escalation*. This can be defined as one-upping. Think of two groups competing for shrinking resources, escalating wars, or politicians competing for the highest spending for the popular vote.
- *The commons' tragedy*. This is where a common resource gets utilised by agents who will aim at maximising their own benefit from a commonly shared resource. If the resource gets over-utilised, then it can lead to rule breaking and escalation.

Step 11 – Path Dependency
Path dependency is important as the cultural and historical conditions of the system will set the bounds in which the system can operate. It will also give some insight into the intent of the system. If the system has had a traumatic past, then that will affect the intent of system. It is likely to lead to an overemphasis on mechanisms for protection and safety.

Path dependency can be understood through an analysis of the system's history. In the case of a country, it can be viewed through the four lenses of economic, political, social and legal. The political lens would cover aspects of foreign relations, including wars. This can be achieved by expert assessment.

Step 12 – Finding the Cultural Values.
Cultural values will also affect the bounds or limits of what the system can do. It will also affect what encoded norms exist and how they may operate. Cultural values are broader, more persistent and more fundamental to a societal system than encoded norms, which are often set by legal or regulatory frameworks. There can be hundreds of values, however, it is important to focus on the most relevant ones. This may start with insights about how different groups of people are perceived, think or behave. For example, Americans consider themselves free, Australians easy going, Burmese devout, while Chinese place an emphasis on family values. In this process, systems often have myths about who they are and this will give insight into the system and where it is likely to go. Other cultures may see themselves as war like, as the natural rulers, or in the case Iceland as peaceful.

Some examples of important values would be in relation to corruption – what is considered corrupt, views on minorities, the use of violence, the availability of guns, telling the truth or following laws.

From a practical standpoint, deliberative forums are an effective way of understanding the values of culture. Likewise, surveys are also a good method of obtaining insight into society's values.

Step 13 – Bringing it Together
After completing step twelve, there will be a wide variety of data to be assessed to better understand what are the best actions to stimulate the system towards the desired result. Some of this data may lie in databases or lists compiled in the analysis.

There are innumerable variations or permutations based on the aforementioned analysis. This text will only cover how to bring the assessment together to understand what actions should be taken. For example, if a system's intent is dysfunctional, the analysis of the purpose and flows of the sub-systems would be different compared to that of a system whose intent was in most respects functioning correctly.

- Firstly, assess whether the actual intent and functioning of the system match its stated intent. There may be some aspects of the intent of the system that are not satisfactory. If so, then analyse the sub-systems, relations and flows to determine what aspects are supporting both the dysfunctional areas and functional areas of intent. Reinforcing positives can be as important as correcting negatives.
- What is the momentum of the system and what are the variations in the momentum of different components of the system? When analysing the momentum, focus on the items that are important and deteriorating, or growing at the fastest pace. Stocks that are growing rapidly may signal a runaway feedback loop is taking place or one that may take place in the future. Use the stocks and size of the flows to better assess these points.
- What are the encoded norms supporting both the positive elements and negative elements discovered in the analysis? What laws or social values affect functions. What needs to be supported and what needs to change?
- Assess which items within the system match an archetype and which are the stocks and flows associated with the archetype.
- Next pull together a list of the things that are not working appropriately. These may be entire sub-systems, stocks or encoded norms. Once this is done, take each of the items and understand the relationships between them. Are there mutual feedback loops, is one a precedent for the other?
- Once this list is developed, attach it to the function for which it is meant to perform. In the case of sub-systems, the functions are part of the sub-system, therefore there will be stocks or encoded norms associated with it within this list. If not, then there may be a problem with the analysis.
- Next step is to analyse the functions. Are the functions appropriate for the performance of the sub-system?
- Cultural values will affect many of the items on the list. How do the cultural values assessed earlier support the items or hold the items in check? This is especially important to understand encoded norms.
- How does the path dependency affect the items on the list? Do they inhibit change or are they factors that will support change?
- How does the homeostasis affect the each of the items on the list? What are the aspects of the homeostasis that are supporting each of the items? Which aspects are suppressing them?

Step 14 – Checking Against Positive Peace
Because of the way it was derived, Positive Peace provides an ideal framework through which the various interventions proposed can be viewed to determine whether the sum of the interventions is truly systemic. Each of the interventions can be grouped under one of the eight Pillars of Positive Peace. Assessing the number of interventions under each of the Pillars provides insight into the completeness of the interventions.

It is useful to take each of the items that need addressing and use the same process to group them under the eight Pillars. This will also provide insight into the nature of the issues. In addition, it will determine whether the issues are fully systemic or partly.

If it occurs that a number of Pillars are not included or there is only a small number of items associated with a specific Pillar, this may indicate that something is missing from the analysis. However, for very specific and targeted applications, the absence of items in particular Pillars may be acceptable. If for example, the analysis was aimed at improving media freedoms the Pillar *Good Relations with Neighbours* may not be applicable or may contain only a small number of items.

In Conclusion
Once this analysis is complete there will be enough knowledge to start looking at what interventions need to be performed

to rectify the imbalances within the system and to set it on a new course. In defining the interventions, it is generally better to attempt to do many small nudges, rather than one big intervention to change the status quo. This lessens the possibility of mistakes. One big mistake is difficult to recover from, whereas small changes can be undone more easily, even if they are numerous. In addition, drastic changes – even those in the right direction – can be disruptive and, in extreme cases, destabilising for the system. Abrupt changes create a great deal of uncertainty and individuals, groups or organisations may be unsure about how they fit in the new systemic structure. For this reason, it is possible that these large changes may cause resistance and antagonism.

The summary in Figure 3.5 illustrates the key attributes and principles of societal systems and helps analysts visualise the steps that comprise their analysis.

FIGURE 2.5
Schematic illustration of system analysis

This stylised summary depicts the key attributes of a system and helps analysts map each attribute to a real-world scenario under analysis.
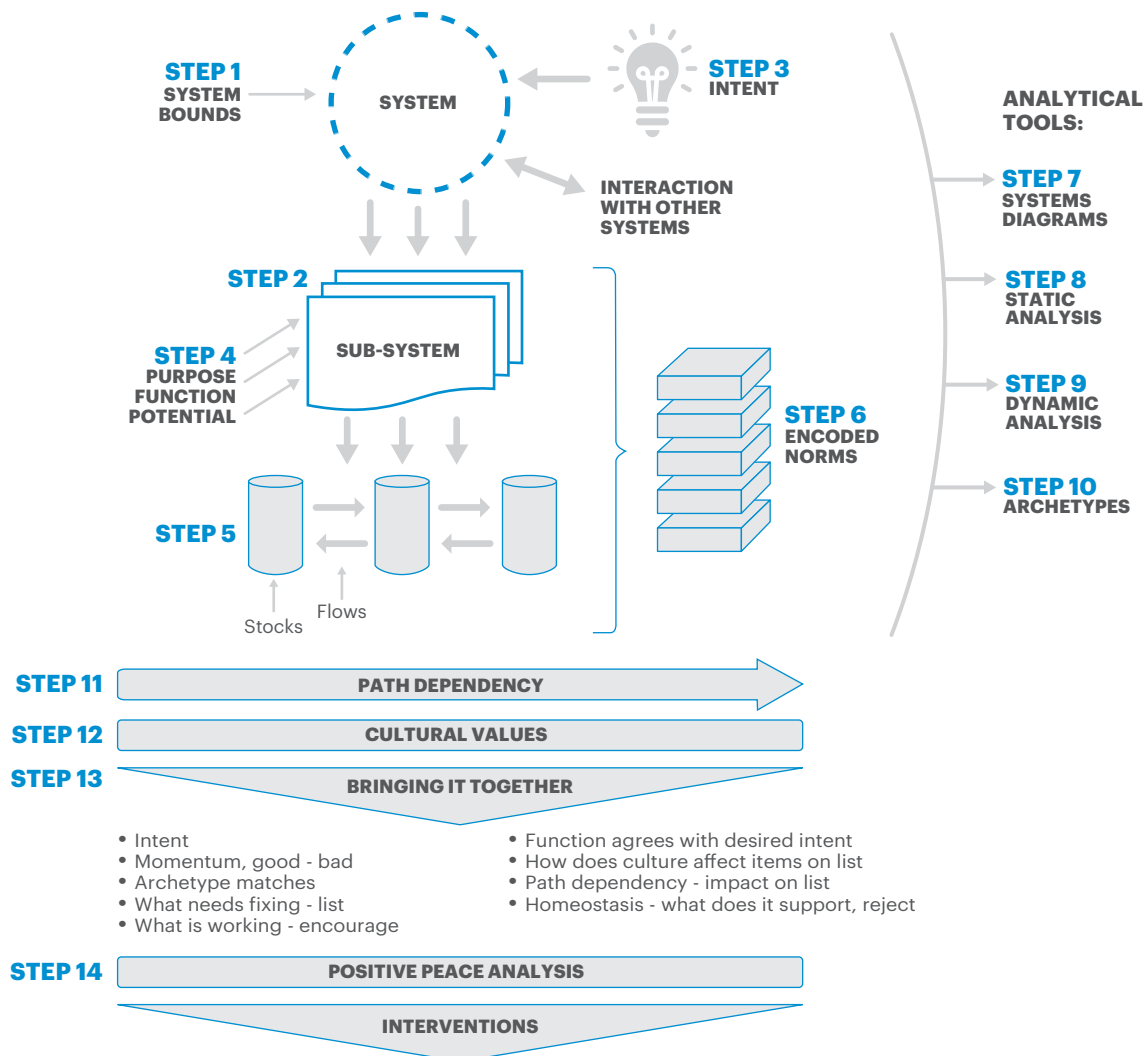
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