

Behavioural Science and Nudge Interventions Database for SDG Acceleration

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Abstract: This paper uses behavioural insights and nudge interventions gathered from across the globe to develop an evidence-based source of nudges for countries to utilise in their adoption of behaviourally informed policy development and implementation. It offers a novel contribution by explicitly specifying how nudges can be used to positively impact the Sustainable Development Goals and their corresponding indicators. We assemble a database (link in the footnote)⁶ consisting of 201 behavioural and nudge interventions whose outcomes have links to the 17 Sustainable Development Goals and use the cases of Albania, Afghanistan and the Kingdom of Saudi Arabia to show how these interventions could be used to improve sustainable development outcomes. Using the quantitative impact of nudges coded in our database we find that behavioural science insights and nudge interventions have the potential to improve SDG outcomes by an average of 45% overall, a considerable impact. With the option to filter for high-impact interventions in our database, behavioural interventions can be a tool for even greater change in the future.

Keywords: behavioural science, nudge, sustainable development goals, SDGs, sustainable development

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<https://www.sciencedirect.com/science/article/pii/S0749597820303836#f0005>; Mark Egan: Nudge Database 1.2, <https://www.dropbox.com/scl/fi/4s2r380ylen4dlvf4l65d/Nudge-Database-1.2.pdf?rlkey=4xsxpm58n9bu81f313vtz0nvl&e=1>; Faisal Naru and Filippo Cavassini: "Behavioural Insights and Public Policy: Lessons from Around the World", https://www.oecd-ilibrary.org/governance/behavioural-insights-and-public-policy_9789264270480-en.

⁶ Naik et al. (2024): Behavioural Science and Nudge Interventions Database for SDG Acceleration. Available at: https://docs.google.com/spreadsheets/d/1tWy0X2Aq08kIUNYG-Cw5FQsvakdKSyKGGKen7_hc2F48/edit?usp=sharing

1. A Need for New Ideas

The Sustainable Development Report (SDR) provides an annual assessment of global progress towards achieving the United Nations' Sustainable Development Goals (UN SDGs). Alarming, the latest edition has reported a drastic delay in meeting the UN 2030 Agenda, with 84 percent of SDG targets severely underperforming⁷. SDG progress has stagnated on all fronts since the crippling effects of the COVID-19 pandemic, when for the first time since its adoption in 2015, the global average SDG Index score was lower than the previous year⁸. Even more concerning, the stark disparity in progress between different country groups has worsened, with the gap between the poorest and most vulnerable countries and the global average further widening since 2015. Now, with just six years left on the timeline and few improvements in sight, cost-efficient and impact-driven approaches to advancing SDG progress are more crucial than ever.

Behavioural insights and nudge interventions⁹ have proven to be effective policy tools¹⁰, underlining their tremendous potential for supporting SDG advancement. The UN Secretary-General himself has encouraged the use of behavioural science within the UN¹¹, expressing the urgent need to pivot beyond standard policy practices to tackle increasingly dynamic issues. Many governments have now adopted “nudge units” into their policy frameworks to enhance public well-being and efficient resource allocation, with notable success. For example, the United Kingdom established the Behavioural Insights Team (BIT) in 2010, which has since improved on various SDG-related domains, including tax compliance, health promotion, and energy conservation. Besides their significant impact, these interventions are also highly cost-efficient, with experts estimating that behaviourally inspired interventions could save countries hundreds of millions of dollars per year¹². Behavioural science is therefore not just a tool for wealthier

⁷ Sachs, J.D., Lafortune, G., & Fuller, G. (2024) The SDGs and the UN Summit of the Future. Sustainable Development Report 2024. Paris: SDSN, Dublin: Dublin University Press. DOI: 10.25546/108572.

⁸ Sachs, J., Kroll, C., Lafortune, G., Fuller, G., & Woelm, F., 2021. The Decade of Action for the Sustainable Development Goals: Sustainable Development Report 2021. Cambridge: Cambridge University Press. Available at: <https://www.sdgindex.org/>

⁹ For the remainder of this paper, behavioural insights and nudge interventions shall be referred to interchangeably and taken to refer to behaviourally inspired interventions.

¹⁰ World Bank, 2014. *World development report 2015: Mind, society, and behavior*. The World Bank; Sunstein, C.R., 2013. *Simpler: The future of government*. Simon and Schuster; Halpern, D., 2016. *Inside the nudge unit: How small changes can make a big difference*. Random House.

¹¹ United Nations (2021) Secretary-General's Guidance on Behavioural Science. Available at: <https://www.un.org/en/content/behaviouralscience/assets/pdf/UN%20Secretary-General's%20Guidance%20on%20Behavioural%20Science.pdf>

¹² Halpern, D. and Sanders, M. (2016) 'Nudging by government: Progress, impact, & lessons learned', *Behavioral Science & Policy*, 2(2), pp. 53-65.

nations but also a suitable and timely investment for even the poorest and most vulnerable countries that are lagging in SDG progress.

Given their utility, it is unsurprising that the implementation of behavioural interventions has surged in recent years. However, while many have been successful, ineffective or poorly designed interventions also saturate the field. Policymakers must therefore contend with a burgeoning array of possible approaches for inspiration, making the designing of apt and effective interventions a time-consuming task. With the urgent nature of SDG progress, we now need a straightforward and impact-driven approach to identifying interventions that work so that they can be replicated in a timely manner.

2. A Blueprint to Draw Inspiration From

Our goal with this paper is to bridge the gap between demand and supply by creating a database of existing nudge and behavioural science interventions that exhibit empirically proven impact. In his guide to “nudging”, Sunstein (2014) emphasised the importance of evidence and testing before implementation¹³. Some designs may seem promising in theory but impractical or ineffective when applied to real-world contexts, where any error may result in further delay toward SDG progress. Our database aims to mitigate this uncertainty through providing a complete preliminary analysis of existing interventions to assess their impact potential, essentially shortening the idea-to-execution process for policymakers.

While there currently exist some nudge databases, none concentrate specifically on their linkages and explicit support for SDG progress. General categorizations like health or environment are useful for narrowing down focus, but there is potential for more specialised classification. For example, the specialised segmentation of SDGs themselves into their respective targets and indicators has made it much easier for policymakers to determine specific problem areas within each field and where to allocate resources and efforts. SDG 3, which covers health and wellbeing, is split into 13 targets and 28 indicators, addressing a wide array of topics from HIV infections to traffic mortality rates. To treat all issues under the “health and well-being” hat as the same would therefore threaten the effectiveness of interventions and potentially worsen any already existing marginalisation.

Our database (Naik et al. (2024): Behavioural Science and Nudge Interventions Database for SDG Acceleration. Available at: https://docs.google.com/spreadsheets/d/1tWy0X2Aq08kiUNYG-Cw5FQsvakdKSyKGKen7_hc2F48/edit?usp=sharing)¹⁴ is the first to leverage this specialised structure by linking each intervention to an associated SDG target or indicator. Policymakers can

¹³ Sunstein, C. (2014) 'Nudging: A Very Short Guide', Journal of Consumer Policy, 37(4), pp. 583-588. doi: 10.1007/s10603-014-9273-1.

¹⁴ Naik et al. (2024): Behavioural Science and Nudge Interventions Database for SDG Acceleration. Available at: https://docs.google.com/spreadsheets/d/1tWy0X2Aq08kiUNYG-Cw5FQsvakdKSyKGKen7_hc2F48/edit?usp=sharing

filter for the indicators in which they are underperforming and be presented with targeted, impactful interventions. In a world where resources are limited and time is of the essence, this approach will streamline the decision-making process and enhance the precision and effectiveness of behavioural policy actions.

For the remainder of this paper, we will first discuss the methodology and logic behind our database construction, followed by an overview of descriptive statistics. We will then provide three real-world examples, using the cases of Albania, Afghanistan and Kingdom of Saudi Arabia, to demonstrate how policymakers in different contexts can utilise our database to improve poor-performing SDGs in particular, but also all SDGs in general. Lastly, we will summarise policy considerations, limitations, and ideas for improvement in the conclusion.

3. Data & Methodology

Database Search Strategy and Coding

The focus of the database¹⁵ was restricted to studies and interventions that demonstrated a quantitative impact. As a result, nudges that merely describe the direction of impact or offer untested recommendations were not included in the database. Convenience sampling in the form of existing nudge databases¹⁶, and behavioural insight compilations¹⁷ was the main method used to find nudges. This led to an over-representation of nudges in certain topic areas such as health and environment. However, this is reflective of the general distribution of published nudge applications. A quantitative review of 100 nudging published papers by Hummel and Maedche, (2019)¹⁸ found that the three categories of health, environment and energy made up 66% of studies in their sample. In a bid to include nudges relevant to all 17 SDG's, a final criterion that each SDG has at least 1 corresponding relevant nudge was implemented. To fulfil this criterion, we searched Google Scholar, journal databases and the websites of research organisations using variations of search terms including key phrases from SDG targets and indicators.

We also prioritised nudges implemented in real-world settings (field experiments and natural field experiments) because we wanted to develop a source of potential nudge ideas that have a shorter

¹⁵ Naik et al. (2024): Behavioural Science and Nudge Interventions Database for SDG Acceleration. Available at: https://docs.google.com/spreadsheets/d/1tWy0X2Aq08klUNYG-Cw5FQsvakdKSyKGKen7_hc2F48/edit?usp=sharing

¹⁶ Egan, M., 2014. Nudge Database 1.2. Available at: <https://www.dropbox.com/scl/fi/4s2r380ylen4dlvf4l65d/Nudge%20Database%201.2.pdf?rlkey=4xsxpm58n9bu81f313vtz0nvl&e=2> [Accessed 11 July 2024]; Beshears, J. and Kosowsky, H., 2020. Nudging: Progress to date and future directions. *Organizational Behavior and Human Decision Processes*, 161(Supplement), pp.3-19.

¹⁷ OECD (2017), *Behavioural Insights and Public Policy: Lessons from Around the World*, OECD Publishing, Paris, <https://doi.org/10.1787/9789264270480-en>.

¹⁸ Hummel, D. and Maedche, A., 2019. How effective is nudging? A quantitative review on the effect sizes and limits of empirical nudging studies. *Journal of Behavioral and Experimental Economics*, 80, pp.47-58.

trajectory to implementation. For this reason, randomised field experiments make up most of the nudges in the database (94%). The quantitative impact of the interventions included in our database was calculated using the maximum effect of nudges in the study. This is because some interventions report impacts on more than just one type of outcome variable or employ 2 or more nudge techniques as part of different treatment arms. We therefore highlighted the maximum possible impact that the intervention could achieve for more effective application to SDG acceleration. Most quantitative impacts of nudges in our database are reported in percentage change, however in cases where the information needed to transform results into percentage change impacts was unavailable, we have included percentage point change as a metric. There were 3 studies that only reported context-based impact which are excluded from our metrics. Therefore, our database consists of 2 metrics of quantitative impact. 96% of studies are reported in percentage change while 4% are reported as a percentage point change. Some interventions focus on reducing the rate of negative outcome variables e.g., school drop-out rates, and so to maintain uniformity in the database we take the absolute value of change so that all quantitative impacts are coded as positive impacts.

For studies where the percentage change metric was available, we converted the impact into an ordinal scale (scale: 1-5, in 25% impact increments) for better reference and comparison. Studies that had a percentage change impact of below 25% were given a rating of 1, while those achieving above 100% change were given a rating of 5. This scale helps stakeholders quickly assess the effectiveness of an intervention, enabling them to prioritize high-impact ones when resources, time, or focus are limited. This is particularly useful for the poorest and most vulnerable countries which may require it most.

Interventions in the database are categorised using a modified version of the nudge categorisation system outlined in Sunstein (2014)¹⁹.

Categorising Nudge Mechanisms

We have outlined below seven of the most common nudge mechanisms utilised in our database and their associated nudge types:

1. Choice Architecture – These nudges alter the way choices are presented to individuals to influence behaviour in predictable ways, without restricting their freedom of choice. There are many types of nudges involving choice design, such as:

- ❖ **Choice design:** Organizing and presenting options in a way that makes certain choices more appealing without making a decision for them or removing other options. A similar, but more specific nudge is **default options**, which involves pre-selecting an option that individuals will then receive if they do not actively make a different selection. This nudge is powerful because people often stick to the pre-set option.

¹⁹ Sunstein, C., 2014. Nudging: A Very Short Guide. *Journal of Consumer Policy*, 37(4), pp.583-588.

- Eg. Arranging healthier food items on the front shelf. (**Choice design**)
- Eg. Automatically enrolling employees into a retirement savings plan but also allowing them to opt-out if they choose. (**Default Options**)
- The converse of this nudge type would be to encourage **active decision-making**.
- ❖ **Framing:** Presenting information in different ways to influence perception and choices.
 - Eg. Describing a yogurt as "80% fat-free" instead of "contains 20% fat" to make it more appealing.
- ❖ **Simplification:** Reducing information complexity to make decision-making easier.
 - Eg. Simplifying tax forms by reducing the number of fields and making instructions clearer to help taxpayers complete forms easily.
- ❖ **Reducing friction:** Removing obstacles or costs that make it difficult for individuals to take desired actions. These costs may be in the form of time, money, attention, etc.
 - Eg. Implementing one-click purchasing options on e-commerce websites to streamline the buying process for users.
- ❖ **Salience:** Making certain choices more prominent or noticeable to attract attention.
 - Eg. Placing healthier food options at eye level in a cafeteria to encourage healthier eating habits.
- ❖ **Anchoring:** Using a particular reference point or anchor to influence subsequent judgments and decisions.
 - Eg. Displaying a high initial price next to a discounted price to make the discount seem more attractive.

2. Priming/Cues – These nudges use subtle signals or prompts to influence behaviour. While they are similar, priming involves a more subconscious association while cues are more direct and attention-drawing. They are often used in combination with choice architecture nudges. These signals can be visual, auditory, or contextual elements in the environment that guide individuals toward a desired action, such as:

- ❖ **Priming:** Subtly influencing people's behaviour by first exposing them to certain stimuli or cues that subconsciously activate particular associations, memories, or responses.
 - Eg. Playing classical music in a wine store to increase sales of more expensive wine by priming customers with an upscale atmosphere.
- ❖ **Visual cues:** Making use of visual design elements to actively guide people's attention and thought towards a particular area to encourage a specific behaviour.
 - Eg. Placing footprints on the ground that lead to trash bins to encourage people to dispose of their litter properly.

3. Norms – These nudges leverage social and individual identities to motivate people into engaging in certain behaviours. They can be in the form of social or personal norms, such as:

- ❖ **Social Norms:** Using social cues, inter- or intra-group comparisons, and fear of non-conformity to influence pro-social behaviour as a result of group identity.
 - Eg. *Providing households with information about their higher energy usage compared to their neighbours.*
- ❖ **Personal Norms:** Activating an individual's internalized standards of behaviour, often linked to their sense of identity, values, and beliefs. It can also involve personalisation to appeal to their self-identity.
 - Eg. *Including the individual's name when making a request to make the communication seem more personal and familiar.*

4. Information Availability – These nudges aim to influence behaviour by providing relevant information that helps individuals make better decisions. This can overlap with the salience nudge as it involves making individuals more cognizant of the severity or consequences of their choices instead of just thinking of them in abstract terms. Examples include:

- ❖ **Feedback:** Providing personalised information on past behaviour to encourage desired changes.
 - Eg. *Sending notifications to users about their high water consumption levels to promote water-saving behaviours.*
- ❖ **Disclosure:** Making information transparent and accessible that may have otherwise been difficult for individuals to access.
 - Example: *Nutritional labels on food packaging.*

5. Commitment/Ownership – These nudges use commitments, goal setting and personal ownership to encourage individuals to commit to a behaviour in advance, making it more likely they will follow through. Examples include:

- ❖ **Commitment devices:** Leveraging psychological principles such as the desire for consistency and the social pressure to honour commitments to change behaviour.
 - Eg. *Asking individuals to sign a public pledge that they will vote in the upcoming election.*
- ❖ **Planning prompts:** Prompting individuals to introspect and develop detailed plans of how they intend to reach specific goals, making it easier to follow through and also triggering a sense of personal ownership. These can also include implementation intentions (if-then-plans).
 - Eg. *Asking individuals to plan out their weekly fitness routine in advance.*

6. Reminders – These nudges prompt individuals to perform a desired action by providing timely cues or notifications, countering the effects of procrastination, forgetfulness, distractions, or inertia. Eg. *Sending daily text message reminders to patients to take their medication at the prescribed time.*

7. Reward/Punishment – These nudges use incentives and penalties to encourage or discourage certain behaviours. These can be financial or non-financial, and either tangible (eg. *money or gifts*) or intangible (eg. *motivation, recognition or praise*).

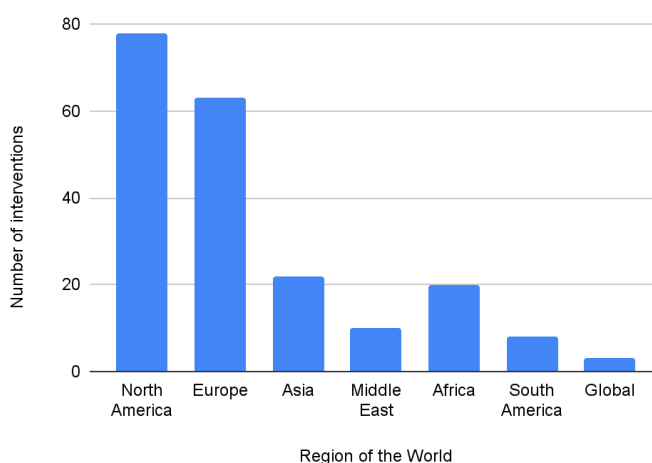
It is important to note that this is not an exhaustive list of all types of nudges, but a good place to start. Other nudges not included in the list above but which appear in our database (such as reflexivity, monitoring, and intertemporal decisions) are henceforth categorized as **“Miscellaneous”** for the purpose of analysis.

While most studies utilized only one type of nudge mechanism, many also applied 2 or more nudge techniques either within the same or separate treatment arms. These interventions are categorized as **“Combination”**. Where possible, we have identified the specific types of nudges used within the combination treatments.

4. Descriptive Statistics – General

Our database²⁰ consists of 201 behavioural insights and nudge interventions from 1982 to 2020 impacting over 360 million individuals in 43 countries.

Figure 1. Distribution of Interventions by Region of the World

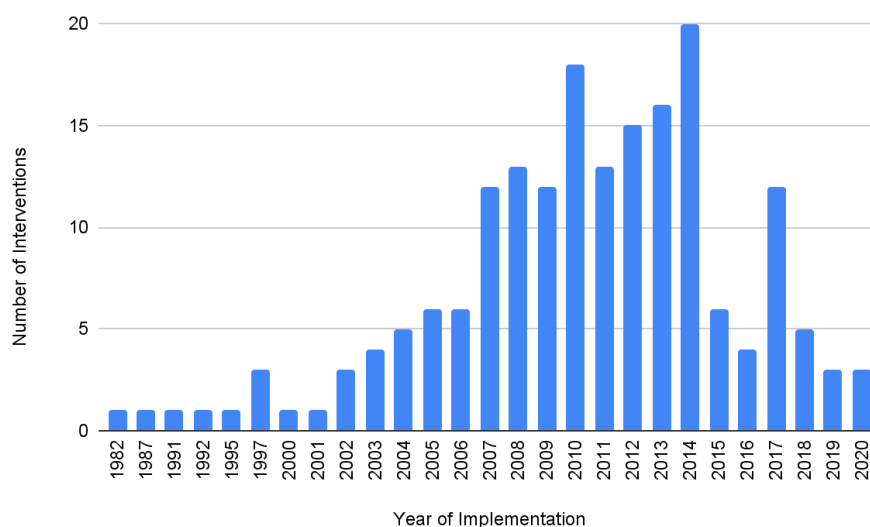


The results of data collection show North America and Europe being most strongly represented in the geographical distribution of implemented nudges (Figure 1). This is quite possibly because

²⁰ Naik et al. (2024): Behavioural Science and Nudge Interventions Database for SDG Acceleration. Available at: https://docs.google.com/spreadsheets/d/1tWy0X2Aq08kiUNYG-Cw5FQsvakdKSyKGGKen7_hc2F48/edit?usp=sharing

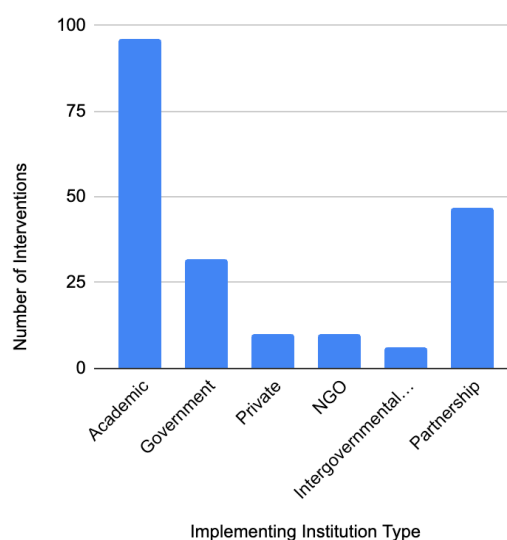
such interventions are more common there than in other parts of the world, as we can see with the lowest number of nudges in South America, Africa or the Middle East and even Asia.

Figure 2. Distribution of Interventions by Year of Implementation



We were able to obtain data on the year of implementation for 93% of interventions in our database (Figure 2). Most of this distribution can be attributed to convenience sampling of the existing nudge databases and resources. However, we do see a steady increase in the use of behavioural science in real-world settings beginning in 2002, highlighting the increasing popularity of behavioural science interventions over the recent decades.

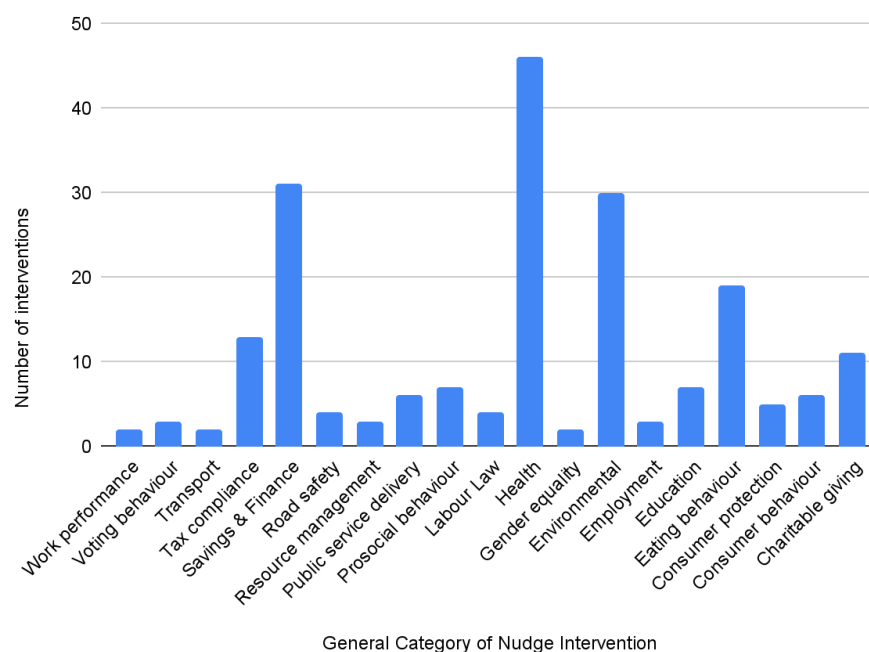
Figure 3. Distribution of Interventions by Implementing Institution Type



Most nudges in the database (48%, n=96) were implemented by Academic institutions (Figure 3). 19% (n=38) were implemented by governments or intergovernmental organisations, and interventions by NGOs and private companies each made up 5% (n=10) respectively were

implemented by NGOs. The remaining 23% were jointly implemented nudges stemming from different combinations of partnerships between the above 5 institutions. Because our criterion for inclusion focused on studies that could demonstrate a quantitative impact rather than just a description of the direction of impact, the database is biased to including academic papers as they provide more detail on the statistical impact of interventions.

Figure 4. Distribution of Interventions by General Category



Interventions in our database are categorised into 17 general areas ranging from Work Performance to Charitable Giving (Figure 4). As expected, Health-related interventions are the most prevalent, constituting 22% (n=46) of the total 201 interventions. Both Environmental Behaviour and Savings & Finance interventions are also significant, each comprising roughly 15% (n=31) of the database. Among the remaining categories, Eating Behaviour, Tax Compliance, and Charitable Giving interventions are relatively more popular, representing 9%, 6%, and 5% respectively.

Figure 5. Distribution of Interventions by Nudge Mechanism

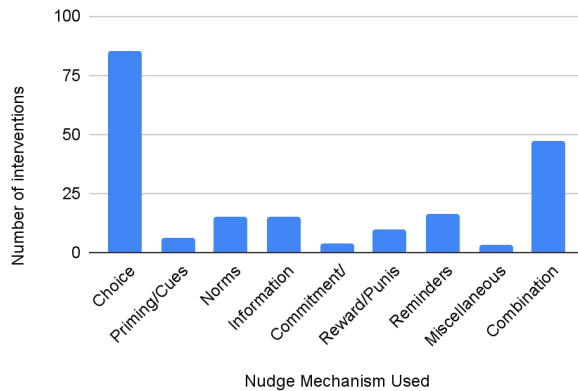


Figure 5 shows the distribution of nudge mechanisms used in our database. Choice Architecture nudges are the most commonly employed, accounting for 42% (n=85) of all interventions. Combination nudge interventions follow, representing 23% (n=47). The remaining nudge mechanisms are less frequently used, each comprising less than 8% of the interventions. Interestingly, a closer look at the mechanisms used within the Combination treatments shows a similar pattern of distribution.

Figure 6. Distribution of Interventions by Nudge Mechanism (Combination disaggregated)

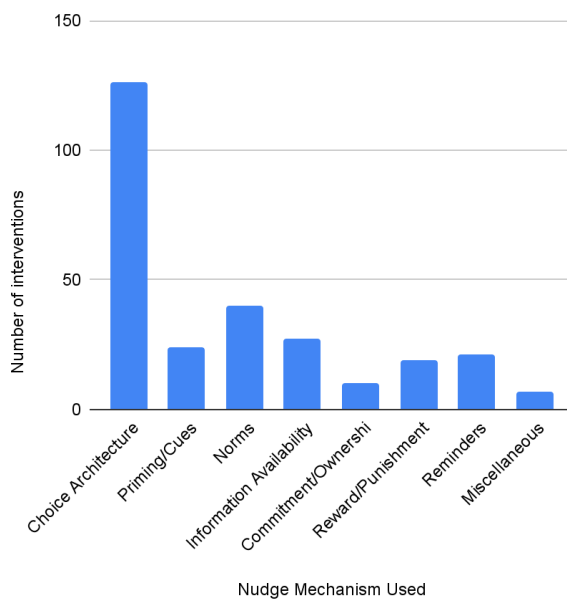
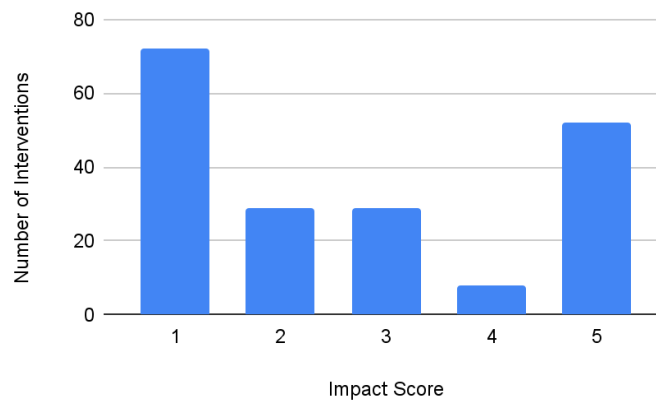


Figure 6 represents the total distribution of nudge mechanisms with Combination treatments broken down, making up a total of 275 data points. Once again, the use of Choice Architecture nudges (46%, n=126) far surpasses all other mechanism types, underscoring the popularity of Choice Architecture nudges in behavioural interventions to date. Also notable is that Norm and Priming/Cues mechanisms were used more frequently within Combination interventions instead of independently, perhaps suggesting their higher efficacy when paired with other behavioural nudges. In contrast, reminders were more often used as standalone nudges.

Table 1. Categorization of Impact Score Scale

Percentage Change (%)	$X < 25$	$25 \leq X < 50$	$50 \leq X < 75$	$75 \leq X < 100$	$X \geq 100$
Impact Score	1	2	3	4	5

Figure 7. Distribution of Interventions by Impact Score

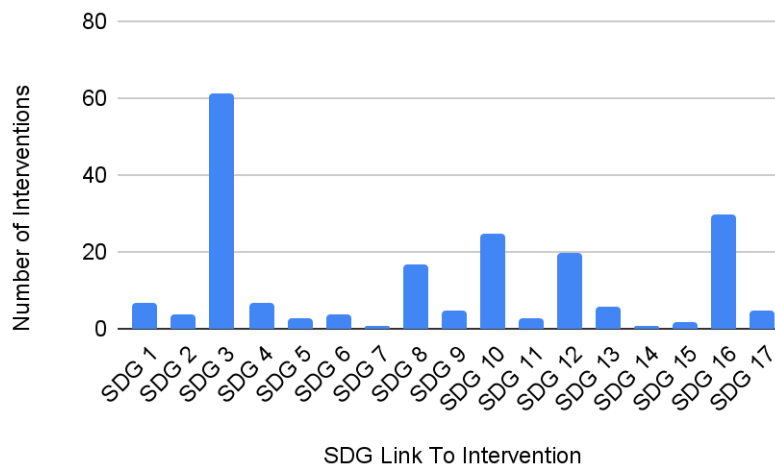


Information on the percentage change impact was available for 190 interventions. All interventions achieved at least a 1% change in the measured variables, with the maximum change reaching a 1467% increase. To facilitate comparison, interventions were assigned impact scores ranging from 1 to 5, with scores of 1 given to interventions showing less than a 25% change (Table 1). However, this scoring system should be considered as a preliminary layer of analysis rather than a definitive measure of impact across categories. This is because variables in different fields exhibit varying degrees of elasticity. For instance, a 1% increase in individuals choosing healthy snacks may not have the same quantitative significance as a 1% increase in public vaccination rates. Regardless, this scoring scale allows us to quickly assess which interventions may be more useful when looking at a specific issue of interest. For example, there are 18 interventions addressing eating behaviour. Policymakers interested in this issue can subsequently use this scale to determine which interventions may be more suitable for this topic.

Figure 7 shows the distribution of interventions based on impact score. 38% (n=72) of interventions achieved a score of 1, with the remaining 62% (n=118) eliciting at least a 25% change. Impressively, 27% (n=52) of interventions were able to create a change of at least 100%, essentially more than doubling the existing values in their targeted outcomes. These promising results represent the tremendous potential for behavioural and nudge interventions to support SDG progress.

5. Descriptive Statistics – Sustainable Development Goals

Figure 8. Distribution of Interventions by SDG Link



This paper offers a novel contribution by clearly linking nudge interventions to the Sustainable Development Goals and their indicators, allowing for more specialised analysis. Each SDG is supported by at least one intervention within our database²¹ (Figure 8). In line with previous literature as well as the breakdown of general categories above, interventions relating to SDG 3 - Good Health and Well-Being dominate the database (30%, n=61). The other leading categories, however, have been further broken down into their more closely related SDGs. For example, the two second-most popular general categories, Environmental Behaviour and Savings & Finance, are now mostly split between SDGs 8, 9, 10, 11 and SDGs 6, 12, 13, 14, 15 respectively. This further categorization will be useful for policymakers in identifying suitable interventions based on the SDGs that they are performing poorly in.

Interestingly, a large proportion (15%, n=30) of the interventions in our database link to SDG 16 - Peace, Justice, and Strong Institutions. This is likely due to the strong connection between SDG 16 and prosocial or compliant behaviour, thus relating closely to behavioural science. For example, nudges that emphasize social norms and personal responsibility can encourage compliance with laws and regulations, fostering a culture of justice and strong institutions²². Additionally, interventions designed to increase transparency and trust in institutions can lead to more peaceful and cooperative communities²³, making them very effective in supporting SDG 16.

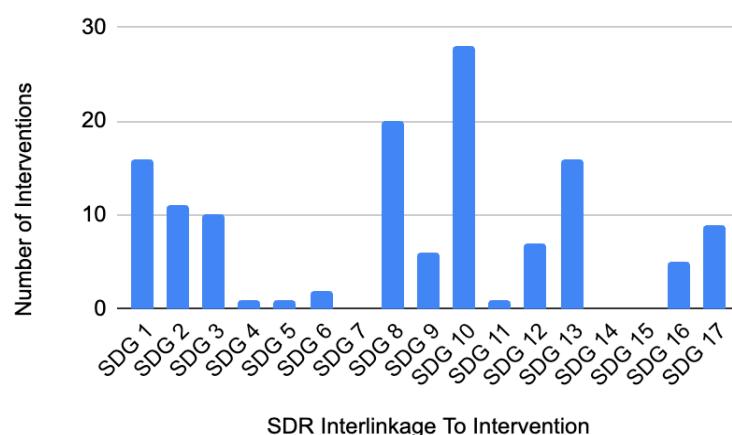
²¹ Naik et al. (2024): Behavioural Science and Nudge Interventions Database for SDG Acceleration. Available at: https://docs.google.com/spreadsheets/d/1tWy0X2Aq08klUNYG-Cw5FQsvakdKSyKGKen7_hc2F48/edit?usp=sharing

²² Thaler, R.H. and Sunstein, C.R., 2008. Nudge: Improving Decisions about Health, Wealth, and Happiness. New Haven, CT: Yale University Press.

²³ Sunstein, C.R., 2014. Why Nudge?: The Politics of Libertarian Paternalism. New Haven, CT: Yale University Press.

Aside from the main SDG link to each intervention, our database also explores the concept of SDG interlinkages as theorized and built upon by Stefan Jungcurt²⁴, Måns Nilsson²⁵, and Aljaž Kunčič²⁶, among others. SDG interlinkages represent how actions affecting one SDG can also create subsequent impacts on other related SDGs. For example, SDG 4 focusing on quality education has interlinkages with SDGs focusing on poverty (SDG 1), gender equality (SDG 5), economic growth (SDG 8), and so on. In this context, behavioural and nudge interventions impacting one SDG can also have positive spillover effects on other associated SDGs. To build upon this, we have reviewed each intervention and linked it, where possible, to a second related SDG.

Figure 9. Distribution of Interventions by SDG Interlinkages



Of the 202 behavioural interventions in our database, 66% (n=133) had strong links to a second SDG (Figure 9). With the exception of SDG14 - Life Below Water, interlinkages were observed across all other SDGs, highlighting the interconnected nature of these goals. This demonstrates strong support for the concept of SDG networks and underscores the potential of behavioural interventions to generate positive externalities across multiple areas of sustainable development.

To comprehensively evaluate the potential impact of behavioural nudges on SDG progress, we review each SDG link as a standalone intervention. For instance, an intervention connected to both SDG 1 and SDG 2 will be assessed separately for its impact on each goal, providing two unique data points. This approach ensures a thorough analysis of how each intervention contributes to the progress of individual SDGs. This process provides us with 334 data points

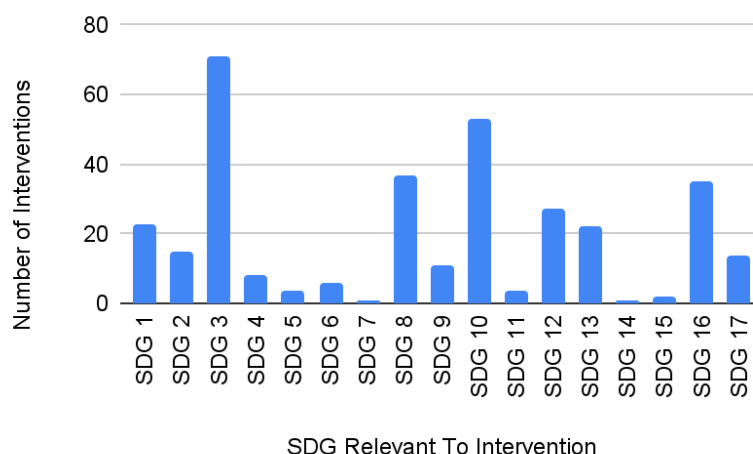
²⁴ Jungcurt, Stefan. Towards Integrated Implementation: Tools for Understanding Linkages and Developing Strategies for Policy Coherence (Winnipeg, Alberta, Canada: SDG Knowledge Hub, International Institute for Sustainable Development, 2016).

²⁵ Nilsson, Måns, Dave Griggs, and Martin Visbeck. "Policy: Map the Interactions between Sustainable Development Goals." *Nature News* Vol. 534 (2016), 320–322.; Nilsson, Måns, Dave Griggs, Martin Visbeck, and Claudia Ringler. A Draft Framework for Understanding SDG Interactions (Paris: ICSU—International Council for Science, 2016).

²⁶ Kunčič, Aljaž. "Prioritising the Sustainable Development Goals Using a Network Approach: SDG Linkages and Groups." *Teorija in Praksa* 56 (Special Issue) (2019), 418–514.

with a distribution as seen in Figure 10. We will utilize this set of SDG link data for our analysis from here onwards.

Figure 10. Distribution of Interventions by SDG Links and Linkages



Comparing Figure 9 to Figure 10, the distribution of interventions remains consistent, with interventions relating to SDGs 3, 8, 9, 12, 13, and 16 remaining the most prevalent. This provides representative information on the general trend in behavioural and nudge research across the different fields.

Table 2: Distribution of Impact Scores by SDG

	Impact Score (1-5)						Average Impact Score	Median % Change
	1	2	3	4	5	?*		
SDG 1 (n=23)	6	1	3	2	8	3	3.25	76.00
SDG 2 (n=15)	4	3	3	0	4	1	2.79	53.45
SDG 3 (n=71)	19	12	13	4	21	2	2.94	55.00
SDG 4 (n=8)	4	1	1	1	1	0	2.25	27.50
SDG 5 (n=4)	1	1	2	0	0	0	2.25	46.00
SDG 6 (n=6)	3	0	3	0	0	0	2.00	32.00
SDG 7 (n=1)	1	0	0	0	0	0	1.00	22.00

SDG 8 (n=37)	17	6	4	0	7	3	2.24	25.00
SDG 9 (n=11)	1	4	3	1	1	1	2.70	47.40
SDG 10 (n=53)	15	7	4	2	20	5	3.10	61.65
SDG 11 (n=4)	1	0	1	0	1	1	3.00	50.00
SDG 12 (n=28)	11	4	4	1	5	2	2.36	30.00
SDG 13 (n=22)	15	2	2	0	2	1	1.67	15.00
SDG 14 (n=1)	0	1	0	0	0	0	2.00	41.00
SDG 15 (n=2)	0	1	1	0	0	0	2.50	48.65
SDG 16 (n=35)	20	4	2	2	6	1	2.12	21.30
SDG 17 (n=14)	3	1	0	0	9	1	3.85	109.00
*Interventions where percentage change information was unavailable were not assigned an impact score and simply categorised as “?”. They were excluded from analysis.							Min	1.00
							Max	3.85
							Ave	2.47
								44.76

Percentage change information was available for 313 (94%) of the 334 data points (Table 2). We assessed the impact potential of behavioural interventions to support each SDG by deriving the average impact score and median percentage change across the interventions within that SDG. We opted to utilise the median percentage change for our analysis instead of the average due to the presence of extreme outliers, particularly on the right tail of the distribution. The few interventions (6%) where percentage change information was unavailable were excluded from our analysis.

The minimum average score was 1.00 for SDG 7 - Affordable and Clean Energy. Notably, there is also only one intervention in our database linked to SDG 7. This is likely due to the systemic nature of SDG 7, which is less likely to be influenced by individual-level behavioural interventions and therefore has warranted fewer interventions within the field. Despite this, the one existing intervention was able to achieve a reasonable 22% change, suggesting that there may be potential for further behavioural investigation in the field.

On the other hand, the maximum average score was 3.85 for SDG 17 - Partnerships for The Goals, with a substantial median percentage change of 109%. The majority of related interventions were

in the category of Charitable Giving, a field that is closely related to behavioural science. Behavioural interventions in this area often leverage the power of social norms and reciprocal motivation to successfully encourage donations and collaborative efforts²⁷, exemplifying the potential for behavioural nudges to create significant impact in areas dependent on voluntary cooperation and support.

Ultimately, this table provides compelling evidence that behavioural science and nudges have substantial potential to drive significant progress toward the SDGs. The interventions show an impressive overall average SDG impact score of 2.47 and an average median percentage change of 44.76% per SDG. With the specialised filter function of our database allowing policymakers to identify and replicate high-impact interventions, this is a conservative estimate of how much the UN 2030 Agenda serves to benefit from integrating behavioural science into standard policy practices.

6. The Potential for Behavioural Science and Nudge Interventions in Albania, Afghanistan and the Kingdom of Saudi Arabia

We now use the cases of Albania, Afghanistan and KSA to illustrate how nudges can be used to directly impact development outcomes in different settings. Using the 2024 Sustainable Development Report, which tracks 106 SDG indicators, we identified the SDGs in which the countries face major/significant challenges and are either in decline or stagnating. These represent the SDGs of top priority for the countries. We then link these top priority indicators to nudges in the database²⁸ with matching outcome variables.

6.1 Application to Albania

The new Sustainable Development Report 2024 was released in June 2024, catapulting Albania from the rank of 54 in 2023 to 42, out of 167 countries examined in the report, a jump of a very impressive 12 places (building on a jump of 7 places last year, and a jump of 3 the year before). Despite these strides, challenges persist. In terms of levels, SDGs 9 (Industry, Innovation, and Infrastructure), 14 (Life Below Water), 5 (Gender Equality), and 2 (Zero Hunger) have been identified as particularly challenging areas. These goals demand urgent attention and concerted efforts to accelerate progress.

Within those goals, the indicators most in need of policy interventions (with lowest absolute levels) are Prevalence of stunting in children under 5 years of age (%), Prevalence of obesity, BMI ≥ 30 (% of adult population), Human Trophic Level (best 2–3 worst), and Sustainable Nitrogen

²⁷ Allcott, H., 2011. Social norms and energy conservation. *Journal of Public Economics*, 95(9-10), pp.1082-1095. ; Thaler, R.H. and Sunstein, C.R., 2008. *Nudge: Improving Decisions about Health, Wealth, and Happiness*. New Haven, CT: Yale University Press.

²⁸ Naik et al. (2024): Behavioural Science and Nudge Interventions Database for SDG Acceleration. Available at: https://docs.google.com/spreadsheets/d/1tWy0X2Aq08kiUNYG-Cw5FQsvakdKSyKGKen7_hc2F48/edit?usp=sharing

Management Index (best 0–1.41 worst) for SDG 2, Demand for family planning satisfied by modern methods (% of females aged 15 to 49), Ratio of female-to-male mean years of education received (%), and Seats held by women in national parliament (%) for SDG 5; Logistics Performance Index: Infrastructure score (worst 1–5 best), the Times Higher Education Universities Ranking: Average score of top 3 universities (worst 0–100 best), Articles published in academic journals (per 1,000 population), and Expenditure on research and development (% of GDP) for SDG 9; Mean area that is protected in marine sites important to biodiversity (%), Ocean Health Index: Clean Waters score (worst 0–100 best), Fish caught by trawling or dredging (%), and Fish caught that are then discarded (%) for SDG 14.

We examine the nudges available for SDGs 2, 5, 9 and 14 and see which ones are particularly relevant under each SDG. Table 3 below shows the total number of nudges for the weakest SDGs for Albania, where we have already removed some of the less relevant ones, with a total of 11.

Table 3: Nudges for the weakest SDGs for Albania

Number	SDG link	Description	Impact	Date	Country	Impact scale
1	SDG 2	N=127 villages. This study tested the impact of two approaches designed to increase parental awareness of developmental deficits on child nutrition and physical growth. Villages were randomly assigned to either a home-based growth chart to enable parents to monitor their children's health and development and compare to the expected range or to community-based monitoring where information about their child's height and weight was provided at community meetings, in this treatment, parents of stunted children under the age of 2 received nutrient supplements. Parents in the control group did not receive any intervention.	Villages that received growth charts experienced a 22-percentage point reduction in the prevalence of stunting among children malnourished at baseline. While community-based monitoring with nutritional supplements did not significantly impact stunting rates.	2013	Zambia	1
2	SDG 2	One of two lunch lines was arranged to display healthier foods	Sales of healthier food increased by 18% and grams of less healthy food consumed decreased by 28%	2010	USA	2
3	SDG 2	The study assessed a 6-month intervention combining shelf labelling and marketing strategies to promote inexpensive foods with good nutritional quality in disadvantaged neighbourhoods in Marseille, France. The intervention aimed to improve food purchasing behaviours by increasing awareness and understanding of the labelling system among customers, resulting in a significant impact on purchases of fruits, vegetables, and starches.	The contribution of inexpensive foods with good nutritional quality to customers' total food spending increased by 1.4% in intervention stores compared to 0.6% in control stores. Awareness of the intervention materials increased to 31% by the end of the intervention, and those aware scored significantly higher in nutrition knowledge quizzes ($p < 0.001$).	2014	France	5

4	SDG 2	Experiment aimed at nudging the eating behaviours of employees of the Supreme Committee for Delivery and Legacy. One experiment involved relocating the fridge displaying packaged fruits to the beginning of the food catering line.	The relocation of the fridge led to an eight-fold increase in the daily average fruit sales in terms of volume.		Qatar	5
5	SDG 5	N=749 married women of childbearing age who had given birth in the past 2 years. Vouchers for contraceptive access were provided to eligible women, with the women randomly divided into 2 groups. In one group the women privately received the vouchers while in another group the husbands were also involved in the voucher program. The couple treatment which essentially gives husbands veto power over contraceptives approximates the spousal consent rules governing many family planning services in developing countries.	Women in the individual group redeemed the voucher for contraceptives 10 percentage points more (53% vs 43%) than women in the couple group. Voucher redemption was even greater among women who believed their husbands wanted more children than they did, 16 percentage points higher.	2007	Zambia	1
6	SDG 5	In round 1, different behaviourally informed text messages (or financial incentives) encouraging current customers to refer mobile wallet services to women were used, while women in the control group did not receive any messages. In round 2, behaviourally informed messages were tested against the company's standard marketing message.	Prompting clients with social norms and reciprocity messages led to a 1.9 percentage point increase each (a 42% increase) increasing the number of users sending referrals, compared to the control group. This was almost just as effective as highlighting monetary incentives which led to a 2.6 percentage point increase in referrals.	2018	Pakistan	2

7	SDG 5	N=6,770 households received different variations of a gender transformative training program aimed at preventing intimate partner violence and other health-related issues. Villages were randomly assigned to: 1. A couples program, 2. A men's only program, 3. A women's only program, 4. A short educational session for households, this group was used as the comparison group. The first 3 interventions focused on identifying and transforming power imbalances and building skills for health, non-violent and equitable relationships.	Sexual intimate partner violence only reduced in communities where the men's only program was implemented. In this group, the odds of women reporting experiences of sexual intimate partner violence in the past year declined by 20 percent while the odds of men reporting perpetrating sexual IPV declined by 27 percent, both relative to individuals in the comparison group. For participants who attended at least 12 of the 14 Unite for a better life (UBL) session, the men's UBL group reduced the odds of perpetrating sexual IPV in the past year by almost 50 percent. While there was no effect of the interventions on physical intimate partner violence.	2014	Ethiopia	3
8	SDG 9	BIS conducted an experiment to see if it was possible to increase the number of businesses opening and clicking through on the content of a newsletter (the GREAT newsletter), which was sent to around 18,000 existing and potential SMEs that had subscribed to receive it.	Applying prevention priming to the email content was the most effective, increasing click-through rates to links by 30% in the case of pre-start-up businesses.	2013	UK	2
9	SDG 9	The exit at Copenhagen Airport consists of two doors. However, most passengers only used one of them. More specifically, approximately 90% of the passengers used the right door, creating a bottleneck that hindered passenger flow. Hence, the airport set out to create two lanes to channel passengers more efficiently.	10.75% of the passengers used the left door (n=2 949) during the control period. During the dark green period, 16.55% used the left door (n=3 419) and during the neon green period, 24.50% of passengers used the left door (n=4 527). This amounts to an increase of 53.95%	2015	Denmark	5

			from the control condition to the dark green condition. An even bigger increase of 127.91% was seen from the control condition to the neon green condition.			
10	SDG 9	BIS conducted a trial to see how it could utilise behavioural “nudges” to maximise response rates for the surveys. • Over 7,000 small businesses who were participants in the Growth Vouchers trial were selected for the survey and randomly assigned to five different groups. Each group heard a different version of the introductory text to the survey. The introductions were modified using principles taken from behavioural science.	Introducing the surveys with messaging based on behavioural insights, specifically a commitment reminder, increased the survey response rate by 5 percentage points relative to using the standard survey introduction.	2014-2015	UK	/
11	SDG 14	Fishers tend to underreport their salmon catching even though they are required to report. This study implements a deterrence-based intervention involving penalties and SMS messages.	Once a deterrence-based measure was implemented, salmon fishers were 41% more likely to report a salmon catch and fishers who received an SMS were 6% more likely to report a catch.	2020	Greenland	2

Source: Naik et al. (2024): Behavioural Science and Nudge Interventions Database for SDG Acceleration, which lists specific sources of academic articles for each of the interventions. Available at: https://docs.google.com/spreadsheets/d/1tWy0X2Aq08klUNYG-Cw5FQsvakdKSyKGKen7_hc2F48/edit?usp=sharing

SDG 2: Zero Hunger

In Zambia, using growth charts to monitor child nutrition reduced stunting by 22 percentage points, while in the USA, rearranging lunch lines to highlight healthier food increased sales by 18%. In France, promoting nutritious foods through shelf labelling increased healthy food purchases by 1.4%. These nudges suggest that Albania could implement growth monitoring programs in schools and healthcare centres, combined with community-based nutrition education to improve child nutrition. Additionally, rearranging school and workplace cafeterias to prioritize healthy food options could promote better eating habits among both children and adults. These interventions contribute directly to SDG Targets 2.1 and 2.2, and also to the SDG Index indicators where Albania is doing particularly poorly, namely Prevalence of stunting in children under 5 years of age (%) and Prevalence of obesity, BMI ≥ 30 (% of adult population).

SDG 5: Gender Equality

In Zambia, privately providing contraceptive vouchers to women increased redemption rates by 10 percentage points, especially among those whose husbands wanted more children. In Pakistan, behaviourally informed text messages increased mobile wallet referrals by 42%. In Ethiopia, gender-transformative training for men reduced reports of sexual intimate partner violence by 20%. For Albania, introducing private health interventions such as confidential contraceptive counselling and vouchers could empower women to make autonomous health decisions. Additionally, promoting mobile financial services through social norms messaging could enhance women's financial independence. Implementing gender education programs for men could help reduce gender-based violence and promote equitable relationships. These interventions contribute directly to SDG Targets 5.1, 5.2, 5.5 and 5.6; and also to the SDG Index indicator where Albania is doing particularly poorly, namely Demand for family planning satisfied by modern methods (% of females aged 15 to 49).

SDG 9: Industry, Innovation, and Infrastructure

In the UK, prevention priming in business emails increased click-through rates by 30%, and using behavioural insights in survey introductions increased response rates by 5 percentage points. At Copenhagen Airport, painting an exit door neon green improved passenger flow by 127.91%. For Albania, similar behavioural nudges could enhance communication and engagement with small businesses. Applying behavioural insights to digital communications and customer service interactions could improve business outcomes and foster innovation. Additionally, using visual cues in public infrastructure, such as colour-coding pathways, could streamline traffic flow and improve overall efficiency. These interventions contribute directly to SDG Targets 9.1 and 9.3; and potentially also to the SDG Index indicator where Albania is doing relatively poorly, namely Logistics Performance Index: Infrastructure score (worst 1 – 5 best).

SDG 14: Life Below Water

In Greenland, implementing deterrence measures and SMS reminders increased the reporting of salmon catches by 41% and 6%, respectively. This approach highlights the importance of compliance in fisheries management. For Albania, adopting similar deterrence-based interventions, such as regular SMS reminders and stricter penalties for underreporting catches, could improve the management of marine resources. Encouraging sustainable fishing practices through community engagement and education programs could also support the preservation of Albania's marine ecosystems. These interventions contribute directly to SDG Target 14.4; and also to the SDG Index indicator where Albania is doing particularly poorly, namely Fish caught by trawling or dredging (%) and Fish caught that are then discarded (%).

Additionally, the policymakers may examine the full list of the Nudges, SDG by SDG, and determine which Nudges under each SDG would be most applicable and possible to introduce as part of the policy mix in the context of Albania.

6.2 Application to Afghanistan

In the 2024 Sustainable Development Report, Afghanistan is ranked 163rd out of 167 countries examined in the report, with an overall score of 48.24. This places Afghanistan among the countries facing significant challenges in achieving the SDGs. The report highlights that Afghanistan faces the largest and most disproportionate challenges, particularly with goals related to SDG 1 on poverty, SDG 5 on gender equality, and SDG 9 on industry, which are critical areas needing urgent attention and substantial improvement. Afghanistan's progress is hindered by ongoing conflicts, political instability, and economic difficulties, which have severely impacted its ability to advance towards the SDGs.

Within those goals, the indicators most in need of policy interventions (with lowest absolute levels) are all indicators in the weakest 3 SDGs. For SDG 1 those are Poverty headcount ratio at \$2.15/day (2017 PPP, %) and Poverty headcount ratio at \$3.65/day (2017 PPP, %). For SDG 5 they are Demand for family planning satisfied by modern methods (% of females aged 15 to 49), Ratio of female-to-male mean years of education received (%), Ratio of female-to-male labor force participation rate (%), and Seats held by women in national parliament (%). And for SDG 9 they are Rural population with access to all-season roads (%), Population using the internet (%), Mobile broadband subscriptions (per 100 population), Logistics Performance Index: Infrastructure score (worst 1–5 best), The Times Higher Education Universities Ranking: Average score of top 3 universities (worst 0–100 best), Articles published in academic journals (per 1,000 population), and Expenditure on research and development (% of GDP).

We examine the nudges available for SDGs 1, 5 and 9 and see which ones are particularly relevant under each SDG. Examining the database shows the total number of nudges for the weakest SDGs for Afghanistan is a collection of 14 Nudges only. Examining them one by one and thinking of the context of Afghanistan and thus disregarding the majority of the ones more relevant for developed countries, Table 4 below shows the collection of 6 nudges, 3 per SDG 1 and 3 per SDG 5, that could inform policy making in Afghanistan.

Table 4: Nudges for the weakest SDGs for Afghanistan

Num ber	SDG link	Description	Impact	Date	Country	Impact scale
1	SDG 1	The study examined the effects of earmarking and partitioning money on saving behaviour among low-income households in rural India. Participants received financial advice and were given earmarked savings in either one or two envelopes, some with pictures of their children. The study found that partitioning and visual cues significantly increased savings rates.	The study found that participants saved more when the earmarked money was partitioned (mean savings of 414 rupees) compared to when it was not partitioned (mean savings of 241 rupees). The presence of children's pictures increased savings to 350 rupees compared to 304 rupees without pictures.	2011	India	3
2	SDG 1	*RCT with 2 interventions. In the first intervention the household was given an insurance voucher, information kit and sent several SMS reminders urging participants to submit their applications, the voucher was valid for 11 months and covered 25%-50% of the family's annual insurance premium. Intervention two involved re-sending the membership application forms, SMS's and a letter by mail reminding participants that the voucher's validity was extended for a few more months. The control group did not receive any intervention. A third intervention was included at the end-line survey with an enumerator offering to help families that had not enrolled complete their application form and delivered it to the insurance company. Letters were also sent to those eligible for this intervention telling them	Interventions 1 and 2 raised enrolment by 3 percentage points each. The follow-up intervention targeting those who had not enrolled the first time but with no discount offered led to a 29-percentage point increase in enrolment relative to the control group, in this intervention more home assistance as the families did not have to deliver the form themselves.	2011	Philippine s	5

		that the voucher was valid until the day of the enumerator's visit.				
3	SDG 1	N=6461 households. RCT testing 3 different insurance policies in 502 villages in Pakistan. 1. Individual policy allowing clients to choose which household members to enrol, 2. Household policy which requires the client to insure all members of the household, and 3. Group policy which requires at least half of the credit group or community to fully insure all members of their household. Each client was also privately offered a small random discount to ascertain the extent of adverse selection and programme sustainability.	The study found risk adverse selection in low-income insurance buyers, this risk can be mitigated by bundling policies at the household or group level. At each subsidy level fewer households bought insurance if enrolment of all dependents was required. However a higher share of dependents were enrolled when a bundled policy was required, when offered the highest subsidy of PKR 30 per person there was a 29-32 percentage point increase in the number of dependents enrolled in the household policy and group policy groups compared to the individual policy group. This demonstrates that some households that buy (partial) insurance when offered the Individual policies would not do so when they were required to insure the whole household.	2014	Pakistan	?

4	SDG 5	N=749 married women of childbearing age who had given birth in the past 2 years. Vouchers for contraceptive access were provided to eligible women, with the women randomly divided into 2 groups. In one group the women privately received the vouchers while in another group the husbands were also involved in the voucher program. The couple treatment which essentially gives husbands veto power over contraceptives approximates the spousal consent rules governing many family planning services in developing countries.	Women in the individual group redeemed the voucher for contraceptives 10 percentage points more (53% vs 43%) than women in the couple group. Voucher redemption was even greater among women who believed their husbands wanted more children than they did, 16 percentage points higher.	2007	Zambia	1
5	SDG 5	In round 1, different behaviourally informed text messages (or financial incentives) encouraging current customers to refer mobile wallet services to women were used, while women in control group did not receive any messages. In round 2, behaviourally informed messages were tested against the company's standard marketing message.	Prompting clients with social norms and reciprocity messages led to a 1.9 percentage point increase each (a 42% increase) increasing the number of users sending referrals, compared to the control group. This was almost just as effective as highlighting monetary incentives which led to a 2.6 percentage point increase in referrals.	2018	Pakistan	2

6	SDG 5	N=6,770 households, received different variations of a gender transformative training program aimed at preventing intimate partner violence and other health related issues. Villages were randomly assigned to: 1. A couples program, 2. A men's only program, 3. A women's only program, 4. A short educational session for households, this group was used as the comparison group. The first 3 interventions focused on identifying and transforming power imbalances and building skills for health, non-violent and equitable relationships.	Sexual intimate partner violence only reduced in communities where the men's only program was implemented. In this group, the odds of women reporting experiences of sexual intimate partner violence in the past year declined by 20 percent while the odds of men reporting perpetrating sexual IPV declined by 27 percent, both relative to individuals in the comparison group. For participants who attended at least 12 of the 14 Unite for a better life (UBL) session, the men's UBL group reduced the odds of perpetrating sexual IPV in the past year by almost 50 percent. While there was no effect of the interventions on physical intimate partner violence.	2014	Ethiopia	3
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Source: Naik et al. (2024): Behavioural Science and Nudge Interventions Database for SDG Acceleration, which lists specific sources of academic articles for each of the interventions. Available at: https://docs.google.com/spreadsheets/d/1tWy0X2Aq08kiUNYG-Cw5FQsvakdKSyKGKen7_hc2F48/edit?usp=sharing

SDG 1: No Poverty

In rural India, an intervention that involved partitioning money into envelopes and using visual cues like children's pictures significantly increased savings among low-income households. Participants who received earmarked money in two envelopes saved 72% more (mean savings of 414 rupees) compared to those who did not partition their money (mean savings of 241 rupees). Additionally, the use of children's pictures increased savings to 350 rupees. In the Philippines, an intervention using insurance vouchers, information kits, and SMS reminders increased health insurance enrolment by 3 percentage points, while a follow-up intervention providing home assistance led to a substantial 933% increase in enrolment. These impactful nudges suggest that similar strategies could effectively enhance savings and insurance uptake in Afghanistan, helping to alleviate poverty by providing financial stability and protection against unforeseen expenses. These interventions contribute directly to SDG Targets 1.1., 1.2., 1.3 and 1.5; and also to the SDG Index indicators where Albania is doing particularly poorly, namely Poverty headcount ratio at \$2.15/day (2017 PPP, %) and Poverty headcount ratio at \$3.65/day (2017 PPP, %).

SDG 5: Gender Equality

In Zambia, a study providing contraceptive vouchers privately to women increased redemption rates by 23.3%, especially among those whose husbands wanted more children. This approach was highly successful in promoting autonomous health decisions among women. In Pakistan, behaviourally informed text messages encouraging referrals for mobile wallet services to women increased referrals by 42%, demonstrating the power of social norms and reciprocity. In Ethiopia, a gender-transformative training program targeting men reduced reports of sexual intimate partner violence by 50% among those who attended most sessions. These successful interventions suggest that similar nudges in Afghanistan could empower women, enhance their financial independence, and reduce gender-based violence, thereby advancing gender equality. These interventions contribute directly to SDG Targets 5.1, 5.2, 5.5 and 5.6, and also to one of the SDG Index indicators where Albania is doing particularly poorly, namely Demand for family planning satisfied by modern methods (% of females aged 15 to 49).

Additionally, the policy makers may examine the full list of the Nudges, SDG by SDG, and determine which Nudges under each SDG would be most applicable and possible to introduce as part of the policy mix in the context of Afghanistan.

6.3 Application to the Kingdom of Saudi Arabia

In the 2024 Sustainable Development Report, KSA is ranked 103rd out of 167 countries examined in the report, with an overall score of 64.9. The report highlights that KSA faces largest and most disproportionate challenges (with knowing that SDG 1 and 10 are missing all data and not calculated) particularly with goals related to SDG 2 on hunger and nutrition, SDG 5 on gender equality, SDG 13 on climate change and SDG 15 on life on land, which are areas needing attention and improvement.

Within those goals, the indicators most in need of policy interventions (with lowest absolute levels) are the following indicators. For SDG 2 those are Prevalence of obesity, BMI ≥ 30 (% of adult population) and Sustainable Nitrogen Management Index (best 0–1.41 worst), for SDG 5 it is still all of them (Demand for family planning satisfied by modern methods (% of females aged 15 to 49), Ratio of female-to-male mean years of education received (%), Ratio of female-to-male labor force participation rate (%), Seats held by women in national parliament (%)), for SDG 13 also all of them (CO₂ emissions from fossil fuel combustion and cement production (tCO₂/capita), GHG emissions embodied in imports (tCO₂/capita), CO₂ emissions embodied in fossil fuel exports (kg/capita)), and for SDG 15 those are Mean area that is protected in terrestrial sites important to biodiversity (%) and Mean area that is protected in freshwater sites important to biodiversity (%).

We examine the nudges available for SDGs 2, 5, 13 and 15 and see which ones are particularly relevant under each SDG. Examining the database shows the total number of nudges for the weakest SDGs for KSA is a collection of 14 Nudges. Examining them one by one and thinking of the context of KSA, not all are equally applicable to KSA, but all have some learning potential and policy informing potential, Table 5 below thus shows the collection of all 14 nudges, 4 per SDG 2, 3 for SDG 5, 5 for SDG 13 and 2 for SDG 15.

Table 5: Nudges for the weakest SDGs for the Kingdom of Saudi Arabia

Number	SDG link	Description	Impact	Date	Country	Impact scale
1	SDG 2	N=127 villages. This study tested the impact of two approaches designed to increase parental awareness of developmental deficits on child nutrition and physical growth. Villages were randomly assigned to either a home-based growth chart to enable parents to monitor their children's health and development and compare to the expected range or to community-based monitoring where information about their child's height and weight were provided at community meetings, in this treatment, parents of stunted children under the age of 2 received nutrient supplements. Parents in the control group did not receive any intervention.	Villages that received growth charts experienced a 22-percentage point reduction in the prevalence of stunting among children malnourished at baseline. While community-based monitoring with nutritional supplements did not significantly impact stunting rates.	2013	Zambia	1
2	SDG 2	One of two lunch lines was arranged to display healthier foods.	Sales of healthier food increased by 18% and grams of less healthy food consumed decreased by 28%.	2010	USA	2
3	SDG 2	The study assessed a 6-month intervention combining shelf labelling and marketing strategies to promote inexpensive foods with good nutritional quality in disadvantaged neighbourhoods in Marseille, France. The intervention aimed to improve food purchasing behaviours by increasing awareness and understanding of the labelling system among customers, resulting in a significant impact on purchases of fruits, vegetables, and starches.	The contribution of inexpensive foods with good nutritional quality to customers' total food spending increased by 1.4% in intervention stores compared to 0.6% in control stores. Awareness of the intervention materials increased to 31% by the end of the intervention, and those aware scored significantly higher in nutrition knowledge quizzes ($p < 0.001$).	2014	France	5

4	SDG 2	Experiment aimed at nudging the eating behaviours of employees of the Supreme Committee for Delivery and Legacy. One experiment involved relocating the fridge displaying packaged fruits to the beginning of the food catering line.	The relocation of the fridge led to an eight-fold increase in the daily average fruit sales in terms of volume.		Qatar	5
5	SDG 5	N=749 married women of childbearing age who had given birth in the past 2 years. Vouchers for contraceptive access were provided to eligible women, with the women randomly divided into 2 groups. In one group the women privately received the vouchers while in another group the husbands were also involved in the voucher program. The couple treatment which essentially gives husbands veto power over contraceptives approximates the spousal consent rules governing many family planning services in developing countries.	Women in the individual group redeemed the voucher for contraceptives 10 percentage points more (53% vs 43%) than women in the couple group. Voucher redemption was even greater among women who believed their husbands wanted more children than they did, 16 percentage points higher.	2007	Zambia	1
6	SDG 5	In round 1, different behaviourally informed text messages (or financial incentives) encouraging current customers to refer mobile wallet services to women were used, while women in control group did not receive any messages. In round 2, behaviourally informed messages were tested against the company's standard marketing message.	Prompting clients with social norms and reciprocity messages led to a 1.9 percentage point increase each (a 42% increase) increasing the number of users sending referrals, compared to the control group. This was almost just as effective as highlighting monetary incentives which led to a 2.6 percentage point increase in referrals.	2018	Pakistan	2

7	SDG 5	N=6,770 households, received different variations of a gender transformative training program aimed at preventing intimate partner violence and other health related issues. Villages were randomly assigned to: 1. A couples program, 2. A men's only program, 3. A women's only program, 4. A short educational session for households, this group was used as the comparison group. The first 3 interventions focused on identifying and transforming power imbalances and building skills for health, non-violent and equitable relationships.	Sexual intimate partner violence only reduced in communities where the men's only program was implemented. In this group, the odds of women reporting experiences of sexual intimate partner violence in the past year declined by 20 percent while the odds of men reporting perpetrating sexual IPV declined by 27 percent, both relative to individuals in the comparison group. For participants who attended at least 12 of the 14 Unite for a better life (UBL) sessions, the men's UBL group reduced the odds of perpetrating sexual IPV in the past year by almost 50 percent. While there was no effect of the interventions on physical intimate partner violence.	2014	Ethiopia	3
8	SDG 13	Randomised controlled experiment whereby the default setting on office thermostats in an OECD office building were manipulated.	A 1-degree decrease in the default caused a reduction in the chosen setting by 0.38 degrees on average. And small decreases in the default (1 degree) led to a greater decrease in chosen settings than large decreases in the default (2 degrees). Default chosen temp setting: 21.1 degrees celcius	2012	France	1
9	SDG 13	Information on the lifetime energy cost of appliances is provided through labelling and training of sales staff.	The training treatments led to a reduction in average energy use of tumble driers sold by 3.4% and by 4.9% in the combined treatment of labelling and staff training.	2011	Norway	1

10	SDG 13	The study conducted a randomized controlled trial with 118 households to test how different messages about household energy use impact conservation behaviour over time. Using advanced metering technologies, the study found that a health-based frame led to persistent energy savings of 8-10% over 100 days, while a traditional cost-savings frame resulted in no significant savings after 7 weeks.	The health-based framing led to persistent energy savings of 8-10% over 100 days, while the cost-savings frame resulted in sharp attenuation of treatment effects after 2 weeks with no significant savings versus control after 7 weeks.	2011-2012	USA	1
11	SDG 13	This study investigated the effectiveness of nonprice information strategies in motivating conservation behaviour. It found that environment and health-based messaging outperformed monetary savings information in driving energy conservation, with families with children achieving up to 19% energy savings.	Environment and health-based messaging motivated 8.2% energy savings versus control. Families with children achieved up to 19% energy savings.	2014	USA	1
12	SDG 13	This study investigated the relationship between the global warming potential (GWP) of meals and consumers' liking of them in a university canteen. It examined whether providing information about climate-friendlier meals through labels and posters affected meal choices and customer satisfaction. The results showed that offering climate-friendly meals with appropriate labelling increased the number of climate-friendly meal purchases without affecting taste satisfaction.	During the pre-test, 46.2% of the purchased hot meals were climate-friendlier. This increased to 55.9% during the intervention with the climate-friendly choice label, showing a significant effect ($\chi^2(1) = 175.05$, $p < .0001$).	2014	Switzerl and	1

13	SDG 15	Experiment to study whether providing information can increase public acceptance of forest management. Simulated images of the consequences of different forest management practices were shown to participants, who would then rank the acceptability of the practice on a seven-point scale. The analysis of the survey responses was clustered according to the participants self-reported forest management beliefs.	In the mixed belief cluster, viewing the information about consequences led to a 33% increase in the acceptability of alternatives to clear-felling in Australian wet eucalypt forests.	2008	Australia	2
14	SDG 15	Field experiment investigating the role of gender in the dissemination of sustainable land management (SLM) techniques. They examine the impact of training female messengers of SLM techniques on the awareness, knowledge, and adoption of SLM practices by other female farmers.	In communities with female messengers, women's awareness of pit planting farming techniques increased by 9 percentage points (from 13.9%) and adoption of the technology increased by 5 percentage points (from 8.4%), compared to communities with only male messengers.	2010	Mozambique	3

Source: Naik et al. (2024): Behavioural Science and Nudge Interventions Database for SDG Acceleration, which lists specific sources of academic articles for each of the interventions. Available at: https://docs.google.com/spreadsheets/d/1tWy0X2Aq08klUNYG-Cw5FQsvakdKSyKGKen7_hc2F48/edit?usp=sharing

SDG 2: Zero Hunger

In Zambia, using growth charts to monitor child nutrition reduced stunting by 22 percentage points among malnourished children, while community-based monitoring with nutrient supplements did not significantly impact stunting rates. In the USA, rearranging lunch lines to highlight healthier food increased sales by 18% and reduced consumption of less healthy food by 28%. A study in France combined shelf labelling and marketing strategies to promote nutritious foods, resulting in a 1.4% increase in the purchase of healthier items. In Qatar, relocating a fridge with fruits to the beginning of the food catering line led to an eight-fold increase in fruit sales. For Saudi Arabia, implementing growth monitoring programs in schools and healthcare centres, combined with community-based nutrition education, could improve child nutrition. Additionally, rearranging school and workplace cafeterias to prioritise healthy food options and using clear shelf labelling could promote healthier eating habits among both children and adults, addressing issues of obesity and malnutrition. These interventions contribute directly to SDG Targets 2.1 and 2.2, and also to the SDG Index indicator where KSA is doing particularly poorly, namely Prevalence of obesity, BMI ≥ 30 (% of adult population).

SDG 5: Gender Equality

In Zambia, providing contraceptive vouchers privately to women increased redemption rates by 10 percentage points, with an even higher increase (16 percentage points) among women whose husbands wanted more children. In Pakistan, behaviourally informed text messages encouraging referrals for mobile wallet services to women led to a 42% increase in referrals. In Ethiopia, a gender-transformative training program for men reduced reports of sexual intimate partner violence by 20% and perpetration by 27%. For Saudi Arabia, introducing private health interventions such as confidential contraceptive counselling and vouchers could empower women to make autonomous health decisions. Additionally, promoting mobile financial services through social norms messaging could enhance women's financial independence. Implementing gender education programs for men could help reduce gender-based violence and promote equitable relationships. These interventions contribute directly to SDG Targets 5.1, 5.2, 5.5 and 5.6, and also to two of the SDG Index indicators where KSA is doing particularly poorly, namely Demand for family planning satisfied by modern methods (% of females aged 15 to 49) and Ratio of female-to-male labour force participation rate (%).

SDG 13: Climate Action

In France, adjusting office thermostat defaults by just one degree Celsius led to a 0.38-degree average reduction in chosen settings. In Norway, training sales staff on lifetime energy costs of appliances reduced average energy use of sold tumble dryers by 4.9%. In the USA, health-based messaging led to persistent energy savings of 8-10% over 100 days, and another study found that environment and health-based messaging motivated 8.2% energy savings, with families with children achieving up to 19% savings. Additionally, offering climate-friendly meal labels in a Swiss university canteen increased the purchase of such meals by 21.6%. Saudi Arabia could benefit

from similar interventions by promoting energy efficiency through adjusted defaults in public and private buildings, providing training for sales staff on energy-efficient appliances, and using health and environment-based messaging to encourage energy conservation among households. These interventions contribute directly to SDG Target 13.2, and through energy saving, also to one of the SDG Indicators where KSA is doing particularly poorly, namely CO₂ emissions from fossil fuel combustion and cement production (tCO₂/capita).

SDG 15: Life on Land

In Australia, providing information about forest management practices increased public acceptance of sustainable alternatives to clear-felling by 33%. In Mozambique, training female messengers in sustainable land management techniques increased awareness and adoption of these practices among other women by 9% and 5%, respectively. In Saudi Arabia, similar strategies could be employed by using targeted information campaigns to increase public support for sustainable land management practices. Training female agricultural leaders to disseminate knowledge about sustainable farming techniques could further enhance the adoption of environmentally friendly practices, contributing to the preservation of Saudi Arabia's natural landscapes and biodiversity. These interventions contribute directly to SDG Targets 15.2 and 15.3, and also to one of the SDG Indicators where KSA is doing particularly poorly, namely Mean area that is protected in terrestrial sites important to biodiversity (%).

Additionally, the policymakers may examine the full list of the Nudges, SDG by SDG, and determine which Nudges under each SDG would be most applicable and possible to introduce as part of the policy mix in the context of the Kingdom of Saudi Arabia.

7. Conclusion, recommendations and limitations

This study offers a novel contribution by assembling a comprehensive database (link in the footnote)²⁹ of behavioural insights and nudge interventions from across the globe, explicitly linking these interventions to the Sustainable Development Goals (SDGs) and their corresponding indicators. By providing a structured repository of 201 nudges with demonstrated quantitative impacts, our database serves as a valuable resource for policymakers seeking to implement behaviourally informed policies. The quantitative analysis reveals that behavioural science interventions have the potential to improve SDG outcomes by an average of roughly 45%, showcasing their significant impact. This evidence-based approach can help streamline the decision-making process, enabling policymakers to quickly identify and replicate high-impact interventions tailored to their specific SDG challenges.

The usefulness of our database is further illustrated through case studies of Albania, Afghanistan, and the Kingdom of Saudi Arabia. By mapping the most critical SDG indicators for these countries

²⁹ Naik et al. (2024): Behavioural Science and Nudge Interventions Database for SDG Acceleration. Available at: https://docs.google.com/spreadsheets/d/1tWy0X2Aq08kiUNYG-Cw5FQsvakdKSyKGKen7_hc2F48/edit?usp=sharing

and linking them to relevant nudge interventions, we demonstrate how policymakers in diverse contexts can leverage behavioural insights to address their unique development challenges. For instance, Albania could benefit from promoting mobile financial services through social norms messaging to enhance women's financial independence, while Afghanistan might improve family planning outcomes through private health interventions. In Saudi Arabia, promoting energy efficiency and sustainable land management practices through behavioural nudges could significantly improve their SDG performance.

Moreover, the specialized filter function of our database allows policymakers to target specific SDG indicators they are underperforming in and select interventions with proven impacts. This targeted approach not only enhances the precision and effectiveness of policy actions but also ensures that limited resources are utilized efficiently. By integrating behavioural science into standard policy practices, countries can accelerate their progress towards achieving the 2030 Agenda. Policymakers are encouraged to use this database to their advantage, leveraging the wealth of information to design and implement impactful interventions.

However, it is crucial to recognize that nudges are not a panacea and should not be viewed as standalone solutions. Behavioural interventions must be integrated into a comprehensive, well-thought-out policy-making approach. Nudges can enhance the effectiveness of broader policy measures but should complement, rather than replace, traditional policy tools and structural reforms. Policymakers must consider the broader context in which these interventions are applied, ensuring that they are part of a cohesive strategy that addresses underlying systemic issues and leverages multiple approaches to achieve sustainable development goals. This integrative approach will maximize the impact of nudges and ensure that they contribute effectively to long-term, sustainable progress.

Moving forward, line ministries in respective countries should consider how the nudges listed in the database could be part of their policy mix. At the government level, countries could also consider setting up a Nudge Unit which could serve as the first filter for selecting nudges most likely to be successful in a particular country setting. These units could then liaise with the appropriate line ministries for implementation. This structured approach would facilitate the effective integration of behavioural science into policymaking, ensuring that interventions are tailored to local contexts and needs.

Despite the promising potential of our database, several limitations should be acknowledged. The interventions included predominantly come from field experiments, which, while offering strong external validity, still represent relatively small samples of the general population. This raises concerns about the generalizability of these findings when scaled up to national policy levels, as cultural, economic, and social contexts can significantly influence outcomes. Additionally, our database shows an overrepresentation of nudges related to health and environment, potentially limiting the comprehensiveness of policy recommendations for other critical SDG areas.

Furthermore, the measurement of impact, predominantly reported in percentage changes, may not fully capture the relative importance and nuances of different interventions across various fields. Practical challenges in implementing these interventions in diverse settings, such as governance structures, resource availability, and public acceptance, further complicate their adoption. The scope of our database, though extensive, is not exhaustive, highlighting the need for ongoing efforts to expand and update the data.

In conclusion, while our database provides valuable insights and a foundational resource for leveraging behavioural science in advancing SDG progress, it is essential to recognize and address these limitations. Future research should focus on expanding the scope of data, improving the generalizability of findings, and ensuring ethical considerations are at the forefront of intervention design and implementation. By adopting a comprehensive and integrative approach, policymakers can maximise the potential of behavioural interventions to drive sustainable development and achieve the SDGs. Additional work is needed to continuously update and refine the database, ensuring it remains a relevant and powerful tool for policymakers worldwide.