AI for SDG 16 on Peace, Justice, and Strong Institutions: Tracking Progress and Assessing Impact[*]

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Abstract

The transition from the Millennium Development Goals (MDGs) to the Sustainable Development Goals (SDGs) brought with it significant changes in the process of creating the goals and with the actual content of the SDGs. One of the most important developments was the inclusion of SDG 16, which recognises the central role of effective, accountable and inclusive political institutions in promoting sustainable development. Yet, a significant shortcoming is the difficulty in measuring progress on this SDG 16. In addition to general issues linked with data availability across the various indicators, a key challenge is aggregating trends across these wide-ranging indicators to track overall progress on SDG 16. A second issue that follows, is that despite claims regarding the centrality of SDG 16 for achieving the other SDGs, little is known about the causal pathways from the different indicators in SDG 16 to the other SDGs and associated indicators. In other words, questions remain over how changes in SDG 16 indicators impact a country's progress towards indicators linked to health, gender equality, water and sanitation, and climate change.

1 Introduction

The transition from the Millennium Development Goals (MDGs) to the Sustainable Development Goals (SDGs) brought with it significant changes in the process of creating the goals and with the actual content of the SDGs [Dasandi *et al.*, 2015; Edwards and Romero, 2014]. One of the most important developments was the inclusion of SDG 16, which recognises the central role of effective, accountable and inclusive political institutions in promoting sustainable development [Whaites, 2016]. This marked an important shift from the MDGs, which were widely seen as apolitical in nature [Saith, 2006]. SDG 16 seeks to 'promote peaceful and inclusive societies for sustainable development, provide access to justice for all, and build effective, accountable and inclusive institutions at all levels.'[1] The associated targets and indicators address a wide range of governance issues – from reducing violence, ending trafficking, and reducing corruption to strengthening institutions at all levels, promoting the rule of law and representative decision-making, and promoting human rights and fundamental freedoms.

The Goal is important in its own right – indeed, it has long been recognised that people's basic freedoms lie at the heart of any concept of development [see Sen, 1999]. In addition, many see SDG 16 as fundamental to progressing on the other SDGs. The interconnectedness of the 17 SDGs has been widely discussed [see Waage *et al.*, 2015; Pradhan *et al.*, 2017]. Many, however, argue that progress on SDG 16 in particular, is crucial for achieving the other SDGs [see Dasandi *et al.*, 2015; Edwards and Romero, 2014; Whaites, 2016]. This is because the Goal is centred on the organisation of power in society and nature of governance, which is crucial for implementing policies that positively impact issues such as poverty, hunger, health, education, gender equality, water and sanitation, and climate change. Without good governance and strong institutions, it will not be possible to address these issues captured in the other SDGs.

Yet, a significant shortcoming is the difficulty in measuring progress on this SDG 16. In addition to general issues linked with data availability across the various indicators, a key challenge is aggregating trends across these wide-ranging indicators to track overall progress on SDG 16. A second issue that follows, is that despite claims regarding the centrality of SDG 16 for achieving the other SDGs, little is known about the causal pathways from the different indicators in SDG 16 to the other SDGs and associated indicators. In other words, questions remain over how changes in SDG 16 indicators impact a country's progress towards indicators linked to health, gender equality, water and sanitation, and climate change. We argue that better use of machine learning techniques can help address these two related aspects of SDG 16: 1) tracking progress on SDG 16 by bringing together data across the different indicators; and 2) measuring the impact of the different aspects of SDG 16 on other SDGs. We discuss both of these two issues in greater detail below.

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[1]https://sustainabledevelopment.un.org/sdg16

2 Tracking Progress on SDG 16

While the importance of SDG 16 – both as a goal in itself, and for ensuring progress on the other goals – is recognised, a major challenge for the effectiveness of SDG 16 is measurement [Edwards and Romero, 2014]. There are a number of obstacles to measuring progress on SDG 16, which we argue can be addressed through machine learning applications.

First, there is the issue of the validity of the measures or indicators used to track progress towards the different targets associated with SDG 16. Indicators are often selected on the basis of data availability rather than the degree to which they track progress on a specific target. For example, Target 16.A is to 'strengthen relevant national institutions, including through international cooperation, for building capacity at all levels, in particular in developing countries, to prevent violence and combat terrorism and crime.' However, there is only one associated indicator, which is Indicator 16.A.1: 'the existence of national human rights institutions in compliance with the Paris Principles.' While this indicator may be important, it clearly does not fully capture the essence of Target 16.A.

A second issue is data availability. Even when we focus on the existing set of indicators associated with SDG 16, collecting data on these different indicators – particularly in developing- and fragile state contexts where capacity for data collection can be severely limited – can be very difficult. In addition, given the highly political nature of some SDG 16 indicators – e.g. Indicator 16.10.1 on 'number of verified cases of killing, kidnapping... and torture of journalists... trade unionists, and human rights advocates in the past 12 months' – there are strong incentives for governments to suppress information on these indicators.

A third issue is how to aggregate trends across the 23 indicators in order to assess overall progress on SDG 16. In other words, given that the various SDG 16 indicators may not be strongly correlated, and countries may be moving in very different directions across the 23 indicators, how can we capture overall progress on SDG 16? Indeed, even in the EU, where data availability is less of an impediment than in other parts of the world, it has not been possible to calculate an overall trend for the SDG 16 due to the problem of aggregating the different indicators.[2]

We argue that the use of latent variable models can help to overcome these barriers to the measurement of SDG 16 and aggregation of overall progress on the Goal. Such models have been successfully applied to measures of political repression and human rights [Fariss, 2014]. Alternative forms of data can be used to supplement existing indicators and address issues of measurement validity and data availability. Textual data from news wires and social media has already been used to extend human rights measures [e.g. Greene *et al.*, 2019]. Additional modes of data such as visual data from television reports and images on social media, and geospatial data are currently underutilised in SDG indicators. The extension of learning systems to include multimodal data input can improve the measurement of SDG 16. Furthermore,

transfer learning and domain adaptation can be explored to improve indicator coverage.

3 Assessing the Impact of SDG 16 on other SDGs

In addition to SDG 16 being of importance in its own right, it is also seen as crucial to making progress on the other SDGs. This is because good governance and strong institutions are seen as fundamental to delivering on objectives linked to poverty, health, education, climate change, etc. However, despite these linkages being widely acknowledged, we know very little about how changes in different SDG 16 indicators affects the other SDGs and associated indicators. For example, how do changes in the proportion of a country's population who believe decision-making is inclusive and responsive (Indicator 17.7.2) influence whether countries have sustainable consumption and production (SCP) national action plans or SCP mainstreamed as a priority into national policies (Indicator 12.1.1)?

Understanding the relationship between the different parts of SDG 16 and other SDG targets is particularly important given the limited resources available for supporting developing countries in achieving the SDGs. By better identifying such links, there is the potential for more country-specific targeting of aid in order to maximise progress on the SDGs, whereby supporting progress in specific aspects of SDG 16 in a country may generate improvements in other SDGs in that country.

Greater use of machine learning can help to better understand such links in different ways. Firstly, improved measurement of the SDG-16 indicators combined with the use of causal models can help us better understand the ways in which the different SDG 16 indicators influence other SDGs. This would enable identification of the SDG 16 indicators that drive change in other SDG indicators (e.g. related to health, education, and poverty).

Secondly, the use multi-layered network models can be used to understand causal interactions between SDG 16 indicators and other SDG targets. In other words, we can better understand the ways in which governance and institutions can affect issues such as health and education. Multi-layered network models were used to predict the emergence of international conflict [Pomeroy *et al.*, 2018]. There have been recent efforts to track how responsive governments are to issues of climate change and health by the application of NLP to country statements in the United Nations General Assembly [see Watts *et al.*, 2018a,b; Baturo *et al.*, 2017].[3] Using such models and examining how such measures of engagement related to different aspects of SDG 16 on the one hand (e.g. Target 16.7 on responsive, inclusive, participatory and representative decision-making) and other SDG indicators (e.g. Target 3.1 on maternal mortality), we can gain a better understanding of how SDG 16 influences other SDGs.

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[2]See: https://ec.europa.eu/eurostat/statistics-explained/index.php/SDG_16_-_Peace,_justice_and_strong_institutions

[3]It is worth pointing out that the authors of this position paper have led this work.

4 Conclusion

The inclusion of SDG 16 on peace, justice, and strong institutions is widely considered to be of huge significance in that it recognised the centrality of effective, accountable and inclusive political institutions in promoting sustainable development. However, there are key obstacles to measuring progress on SDG 16, and assessing how such progress influences a country's ability to achieve other SDGs. This paper argues that better use of machine learning can significantly improve our ability to track progress on SDG 16, and to measure the effects of changes across different SDG 16 indicators on other SDGs. It also outlines the different ways in which the application of machine learning can do this. This has the potential not only to enable a better understanding of the key governance issues across countries where improvements are required, and to better target support to countries in helping address SDG-16 and other SDGs that are affected.

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