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

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The transition from the Millennium Development Goals (MDGs) to the Sustainable Development Goals (SDGs) led to significant changes in terms of the process of creating the goals and with the actual content of the SDGs (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.'[3] The associated targets and indicators deal with 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 different SDGs has been widely discussed (see Waage et al. 2015; Pradhan et al. 2017). However, many argue that progress on SDG-16, in particular, is crucial for achieving the other SDGs (see 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 such issues captured in the other SDGs.

Yet, a significant issue with SDG-16 is the difficulty in measuring progress on this Goal. As well as issues linked to data availability across the various indicators, a key challenge is aggregating trends across these wide-ranging indicators to track progress on SDG-16 more generally. A second issue that follows from this, is that despite the claims regarding the centrality of SDG-16 towards achieving the other SDGs, little is known about the causal pathways from changes in different indicators included in SDG-16 to impact on countries' progress on the other SDGs and associated indicators. 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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[3] https://sustainabledevelopment.un.org/sdg16

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 regarding the effectiveness of SDG-16 is measurement (Edwards and Romero 2014). There are several problems with 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: 'existence of national human rights institutions in compliance with the Paris Principles'. While this indicator is important, it is clear that it 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 various indicators, particularly in developing- and fragile state contexts, where capacity for data collection is severely impacted. Furthermore, given the highly political nature of certain 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.

The third issue is how to aggregate trends across the 23 indicators in order to assess overall progress on SDG-16. In other words, given 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 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, tracking overall progress on SDG-16 has not been possible to calculate an overall trend for the Goal due to the problem of aggregating the different indicators.[4]

We argue that alternative forms of data can be used to supplement existing indicators. Textual data from news wires and social media has already been used to extend human rights measures (e.g. Greene et al. 2019). However, additional modes of data like visual data from television reports and images on social media, and geospatial data are currently underutilised in SDG indicators. Extending to multimodal data input in the learning systems can improve the measurement of SDG-16. Furthermore, transfer learning and domain adaptation can be explored to improve indicator coverage.

Assessing the Impact of SDG-16 on other SDGs

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

In addition to SDG-16 being of importance in its own right, the Goal is seen as crucial to making progress on the other SDGs. This is because good governance and strong institutions are seen as crucial 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 effects 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) related to 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 aspects 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 focusing on supporting progress in specific aspects of SDG-16 in a country may lead to significant 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 predictive 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 indicator that is the best predictor of 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 governance and institutions can affect issues such as health and education. For example, 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 UN General Assembly (see Watts et al. 2018a, 2018b).[5] By 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.

Conclusion

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

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