How Do Countries Use Resource Tracking Data to Inform Policy Change: Shining Light into the Black Box

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Abstract—Resource tracking exercises produce data that can be used to inform decisions about health policy issues such as mobilizing resources, pooling resources to minimize risk, and allocating resources for health. However, the factors that help countries evolve from merely producing resource tracking data to using it for decision making have been hard to specify. Countries often produce data that remain unused, and key health policy decisions are made without using available data. We develop a framework highlighting the factors that contribute to the use of resource tracking data for more informed policy decisions. Analyzing experience across 16 countries, we identify (1) characteristics of and actions taken by local country resource tracking teams that facilitated data use and (2) circumstances that were outside of teams’ control but also influenced data use. We find that (1) clear definition of policy questions, (2) production of high-quality data, and (3) effective dissemination of resource tracking results are observed in countries that have successfully used resource tracking data in making tangible policy changes.

INTRODUCTION

“Data for decision making” describes the use of empirical data to inform important policy decisions. This is in contrast to policy decisions based on anecdotes, opinions, or historical trends. Though it may be straightforward to identify whether countries have or have not used data to inform decision making, it is more difficult to understand what contributed to the use (or lack of use) of data. Such understanding would help countries systematically promote the use of data as part of their decision-making process.

Resource tracking data are a particularly important source of information that countries have been using to understand financial flows in the health sector since the 1950s. Resource tracking data measure the magnitude of...
health sector spending and track this spending through the
health system. There are a variety of resource tracking
methodologies, including the system of health accounts,2
national AIDS spending assessments,3 public expenditure
reviews,4 and public expenditure tracking surveys.5
Resource tracking data have been used by countries to
make data-driven policy decisions about (1) mobilizing
resources for health (e.g., revenue retention schemes in
health facilities),6 introduction of sin taxes7, (2) pooling
resources to minimize risk (e.g., the introduction or
reform of public insurance schemes6), and (iii) allocating
resources for health (e.g., greater investment at primary
care level6 or toward certain disease priorities8). Develop-
ment partners, such as the United States Agency for Inter-
national Development and the World Health Organization
(WHO), have invested substantial funds to institutionalize
regular production and use of resource tracking data to
inform policy.

However, many countries still struggle to establish routine
systems for producing and using resource tracking data to
support their policy decisions.

In this article, we sought to answer two questions: (1) Are
there factors associated with more consistent use of resource
tracking data? and (2) Can those factors be structured into a
tool to support other countries to use their data to inform pol-
icy? We follow a two-step process to answer these questions
with the aim of shining light into the “black box” of how
countries can use data to inform policy.

METHODOLOGY

Step 1: Identifying Factors Associated with Use of Data
and Proposing a Framework

We first conducted a literature review of existing frame-
work and conceptual models related to general data for
decision making in the health sector, followed by a
review of health resource tracking data for decision mak-
ing. The key words “health expenditure,” “resource
tracking,” and “health expenditure tracking” were used in
different combinations with key words “data” and
“policy” to identify relevant publications in Google
Scholar, PubMed, and the Abt Associates Research
Library. We combined the findings from the literature
review of 21 articles with results from a survey of factors
affecting countries’ use of health accounts data that
authors conducted as part of a four-day health accounts
peer-learning workshop in November 2016. The written
survey covered a range of questions around health
accounts production and use. In particular, it asked 67
government technicians, policy makers, and technical
advisors from 42 countries9 what would be most helpful
for their countries to increase the use of health accounts
data for policy decisions. Structured interviews over the
phone and in person with 13 resource tracking technical
experts were also conducted. These experts were identi-
fiied based on their experience in providing technical
assistance for resource tracking exercises in low- and
middle-income countries via the Health Finance and Gov-
ernance (HFG) project.

We compiled the key factors associated with the use of data
that were consistently referred to in the literature, results from
the peer learning workshop, and the technical expert inter-
views. Using this information, we developed a framework (the
resource tracking data for policy framework) that identifies
the key factors that facilitate the use of resource tracking data
for decision making. The resource tracking data for policy
framework is organized by three key dimensions: clear
demand for resource tracking analysis, high-quality produc-
tion of the analysis, and promoting use of the analysis. It tracks a
total of seven factors across those three dimensions.

We realize that the literature makes a distinction between
the terms “data,” “information,” and “knowledge,”9 where
raw data are facts and figures. Once analyzed, meaningfully
arranged, and put into context, raw data becomes informa-
tion. Information becomes knowledge when it is absorbed by
people and only then can influence decisions. In this article
we use the terms data and analysis to refer to information.

Step 2: Application of the Resource Tracking Data
for Policy Framework to Country Examples

To test the validity of the framework and to verify that a
higher score on the framework is, in fact, correlated with
more likelihood of use of the data, we applied this framework
to 16 countries where the authors have supported at least one
resource tracking exercise within the last five years:

– Low-income10: Benin, Burkina Faso, Burundi, Ethiopia,
Haiti, Tanzania
– Lower-middle income: Bangladesh, Cambodia, India
(Haryana State), Indonesia, Nigeria (national level,
Lagos, Cross Rivers, and Rivers states), Vietnam
– Upper-middle income: Botswana, Namibia, St. Vincent,
and the Grenadines
– High-income: Barbados

The Delphi method11,12 was used to score each of the 16
countries against the seven factors across the three dimen-
sions of the resource tracking data for policy framework, in
order to assess the level of use of resource tracking data and the reasons. A country received a score of one to three for each of the seven factors (where 1 = no/beginning competency of the factor, 2 = developing competency, and 3 = competency). Appendix A shows the scoring guide for assessing a country against each of the seven factors across three dimensions. Scoring was conducted by a minimum of three technical experts who were familiar with each country’s resource tracking exercise. In the first round, each technical expert provided his or her individual scores for each of the framework’s seven factors. In the second round of scoring, a summary of the experts’ scores was provided and the experts discussed and revised their scoring (as necessary). This triangulation of the scores reduced variance among the experts to converge to a final score for each factor for each country. Due to limited historical data availability, each country was scored only on the most recent resource tracking exercise, regardless of how many resource tracking exercises they had conducted over the past five years.

In addition to this scoring, we drew examples of policy use from the literature and from interviews with resource tracking experts who provided technical support in those countries. The contribution of data to informing a country’s policy decision was determined based on reporting of such in the literature or through interviews with resource tracking technical experts closely involved in that country’s work. To narrow down the diverse examples of use of resource tracking data, this analysis used a strict definition of “use”: where resource tracking data contributed to a policy decision aimed at increasing or reallocating resources for health.

RESULTS

Finding 1: Factors Associated with Use of Data and Proposal of a Framework

Factors Associated with the Use of Data to Inform Policy; Literature Review

There have been numerous efforts to identify contributing factors to the use of data for decision making. Rodriguez et al. distinguish among individual competencies, organization capabilities (such as government structures, practices, and resources), and health systems interactions (government leadership and the broader policy environment) as contributors to the likelihood of using data. Wilkins et al., via the Data for Decision-Making Project of the Centers for Disease Control and Prevention, identify data timeliness, accuracy, simplicity, flexibility, acceptability, and usefulness as key factors that help or hinder data use in decision making. The WHO, Lavis and the Translating Evidence into Action Thematic Working Group, Head, and others have written extensively on the topic of knowledge transfer in terms of supply-side push strategies (open access to research, proactive dissemination, user-friendly summaries of research) and demand-side pull strategies (building technical capacity to use research, communicating benefits of data for decision making at all government levels, establishing performance criteria related to use of research) to encourage data use.

De et al. present one of the first frameworks for the use of health resource tracking data specifically. They concluded that resource tracking data played the most effective role in policy decisions when (1) dissemination was tailored to different audiences with appropriate products and there is (2) high perceived report credibility, (3) strong stakeholder buy-in, (4) policy advocacy, (5) a conducive political environment, and (6) results were in line with user expectations. The World Bank’s guide for institutionalizing health accounts identified a virtuous cycle of demand and use, production, dissemination, and translation of data/dissemination to institutionalize health accounts into decision making. Price et al. demonstrated how the existence of health system performance indicators related to resource tracking, linking data to policy objectives, cross-walking resource tracking frameworks to policy issues, and sharing health accounts data for collaborative research can lead to effective use of data for policy even in low-income settings. Participants in the November 2016 HFG-WHO peer learning workshop cited (1) effective dissemination to ensure that decision makers who can influence policy change get the data, (2) engaging those stakeholders regularly and continuously, and (3) presenting results and products that clearly link data directly to policy as the driving factors that influence the use of health accounts data in their countries.

We did find a set of factors associated with data playing a greater role in decision making. Factors were defined using common themes from existing frameworks, key informant surveys, and interviews—common themes that emerge from the literature review and interviews are the importance of producing high-quality, credible data and of packaging and disseminating data in a way that is user friendly. Out of this review, the following seven factors were identified: Factor 1: Clearly defined problem/challenge; Factor 2: Effective consensus-building; Factor 3: Technical capacity of local team; Factor 4: Credibility of the organization producing the data; Factor 5: Policy-
relevant packaging of the analysis; Factor 6: Effective dissemination; and Factor 7: Health financing indicators tracked in the health system. These factors are described in more detail in the next section.

We did not identify any previous studies that compiled these critical components into a framework that countries can use to gauge what they can do to further increase use of resource tracking data for policy.

Introducing a New Framework for Promoting Use of Resource Tracking Data to Inform Policy

We propose a resource tracking data for policy framework to support countries so that resource tracking data can play a greater role in decisions about health financing. The resource tracking data for policy framework (Figure 1) includes a cyclical process organized by three key dimensions: clear demand for resource tracking analysis, high-quality production of the analysis, and promoting use of the analysis. The three dimensions of the framework are interrelated and, though many countries naturally start at the top with clear demand for resource tracking analysis, there is no distinct starting point. For instance, in one country it might be a policy maker specifically requesting resource tracking analysis that drives the data’s production and use, whereas in another country it might be a policy maker discovering existing data that leads to its use. For the framework to be useful, we focused on factors that were considered within the control of the local country resource tracking team. For each dimension, factors were defined using common themes from existing frameworks, key informant surveys, and interviews. To ensure that the framework is practical and focused, we limited those factors to those that the local country resource tracking team can influence to increase the chances that their data will be used in making policy decisions. Following is additional detail about the three dimensions and seven factors of the framework.

Dimension 1: Clear Demand for Resource Tracking Analysis
When policy makers ask for up-to-date expenditure and financial data to help them address a specific policy question, there is a high likelihood of use. Therefore, this first dimension in the framework assesses why resource tracking data are being requested, how requests for resource tracking data are generated, and which policy questions are to be addressed. Having a clearly defined request and rationale for resource tracking analysis correlates with greater likelihood of the data being used (Factor 1: Clearly defined problem/challenge). In addition, the link between data demand and use is strengthened when there is regular and transparent dialogue between those producing and those using the data (Factor 2: Effective consensus-building). Involving those who use

FIGURE 1. Resource Tracking Data for Policy Framework of Key Factors that Facilitate Use of Resource Tracking Data for Policy Decisions. RT = resource tracking
the data in the entire process (e.g., defining the problem, collecting and analyzing the data, and using the data) and engaging them on the type of analysis that best suits their needs helps to obtain buy-in from data users.

**Dimension 2: Production of High-Quality Resource Tracking Analysis**

Key informants stressed the importance of having local technical capacity to effectively respond to requests for data. Lack of, or limited, technical capacity to produce high-quality analysis can leave that demand unfulfilled. Producing high-quality analysis requires a team with multiple skill sets, including statisticians, economists, accountants, public health professionals, and data enumerators (Factor 3: Technical capacity of local team). Building cadres with these skills sets is important, as is accessing that expertise to produce high-quality resource tracking analyses. This dimension also takes into consideration the credibility of the organization producing the financial analysis. Organizations that have an official mandate to produce resource tracking analyses, that have a history of doing so, and/or that have known technical capacity to produce these analyses are respected so that the users will trust what they produce (Factor 4: Credibility of the organization producing the data).

**Dimension 3: Promoting Use of Resource Tracking Analysis**

Requestors of resource tracking analysis or potential users for whom the data would be valuable are not always health financing experts. Therefore, distilling, tailoring, and packaging the information into a format and language that the requestor will understand helps ensure that the information will be used (Factor 5: Policy-relevant packaging of the analysis). This includes presenting data in clear, jargon-free language concomitant with the audience’s technical knowledge, translating analysis into policy implications, and presenting findings that address the original problem. Also important is making sure that the people who need the analysis have access to it; for example, making data available on a website and distributing printed copies widely (Factor 6: Effective dissemination). If the users have been engaged from the beginning (as explained in Dimension 1), they should be the primary audience for the analysis. In addition, when resource tracking data are integrated into routine monitoring indicators, stakeholders begin to internalize the need for resource tracking analysis so that it is regularly produced and used (Factor 7: Health financing indicators tracked in the health system). For example, having annual health sector performance indicators, such as health spending as a percentage of gross domestic product, automatically leads to the generation of resource tracking data in order to monitor that indicator. Some countries including Fiji have included “output” indicators such as the production of health accounts data to ensure the production of resource tracking data.19

Some factors that facilitate the use of data will always remain outside of the local country resource tracking team’s control. Some of these emerged from the literature review and the key informant interviews. For example, the political will of senior officials to use evidence to inform policy change can enhance or inhibit data use. The existence of a champion who advocates for resource tracking or ensures consideration of its findings during policy discussions can also contribute to its use. These factors were not considered in this framework.

**Finding 2: Results from the Application of the Resource Tracking Data for Policy Framework to Country Cases**

The authors applied the resource tracking data for policy framework to 16 countries. Scores from the 16 HFG countries are presented in Table 1. Country scores range from a low of ten (St. Vincent and the Grenadines and Haryana State) to a high of 20 out of 21 (Ethiopia and Burkina Faso) and averaged 14.8. Of the 16 countries studied, seven (Ethiopia, Burkina Faso, Bangladesh, Vietnam, Namibia, Barbados, and Benin) successfully used resource tracking data to achieve policy changes. Higher scores on the seven factors were observed in countries that had used resource tracking analysis to influence policy. Over three quarters of the countries scoring 15 or above (e.g., above average) on the framework had one or more examples of resource tracking data having informed policy. No country scoring below 15 had policy use examples.

Across all 16 countries, on average, countries tended to score the highest on factor 4, “credibility of the organization producing the data,” with an average score of 2.6 out of 3. On average, countries scored lowest on factor 7, “health financing indicators tracked in the health system,” with an average score of 1.6.

Analyzing the 16 country scores by the three dimensions (clear demand for resource tracking data, high-quality production, and promoting use of resource tracking data) shows that, on average, countries tended to fare best on production (average score = 2.38), followed by demand (average score = 2.03), and then promoting use (average score = 1.98). This would suggest that it is easier to produce data than to ensure clear demand and promote use. This pattern changed slightly among the seven “policy use” countries. They still scored
| Dimension Factor | Year of Analysis | Clear Demand for Resource Tracking Analysis | Production of High-Quality Resource Tracking Analysis | Promoting Use of Resource Tracking Analysis | Total Score out of 21 | Policy Use of Resource Tracking Data |
|------------------|-----------------|---------------------------------------------|-----------------------------------------------------|---------------------------------------------|-----------------------|-------------------------------------|
| Ethiopia         | 2013–2014       | 3 2                                        | 3 3                                                 | 3 3                                        | 20                    | Used as evidence to introduce revenue retention policy for health centers to increase health spending and introduce community-based health insurance to provide more financial protection to the poor.<sup>6</sup> |
| Burkina Faso     | 2015            | 3 3                                        | 3 3                                                 | 3 3                                        | 20                    | Used to understand household spending over time (on insurance and on types of services and providers). This information was used to design the country’s universal health coverage mechanism.<sup>32</sup> |
| Bangladesh       | 2012            | 3 2                                        | 3 3                                                 | 1 3                                        | 18                    | Used data on household out-of-pocket health spending to support introduction of social health insurance; will monitor the spending to |
| Dimension Factor | Year of Analysis | Clearly Defined Problem/Challenge | Effective Consensus-Building | Production of High-Quality Resource Tracking Analysis | Promoting Use of Resource Tracking Analysis | Health Financing Indicators Tracked in the Health System | Total Score out of 21 | Policy Use of Resource Tracking Data |
|------------------|-----------------|----------------------------------|-----------------------------|-----------------------------------------------------|------------------------------------------|----------------------------------------------------------|----------------------|-----------------------------------|
| Vietnam          | 2015            | 3                                | 3                           | 2                                                   | 3                                        | 2                                                        | 3                    | 18                               |
|                  |                 |                                  |                              |                                                     |                                          |                                                          |                      | Used to increase government spending on HIV/AIDS by 185% between 2012 and 2013.33 Integrated HIV services into social health insurance.35 |
| Burundi          | 2013            | 2                                | 2                           | 3                                                   | 3                                        | 2                                                        | 3                    | 17                               |
|                  |                 |                                  |                              |                                                     |                                          |                                                          |                      | Increased government resources for reproductive health.26,27 |
| Namibia          | 2014–2015       | 2                                | 2                           | 3                                                   | 3                                        | 3                                                        | 3                    | 17                               |
|                  |                 |                                  |                              |                                                     |                                          |                                                          |                      | Increased government resources for reproductive health.26,27 |
| Barbados         | 2012–2013       | 2                                | 2                           | 2                                                   | 3                                        | 2                                                        | 2                    | 16                               |
|                  |                 |                                  |                              |                                                     |                                          |                                                          |                      | Introduced 10% tax on sugary food and drinks to increase spending on preventing and treating noncommunicable diseases.7,30 |
| Benin            | 2015            | 1                                | 2                           | 3                                                   | 3                                        | 2                                                        | 2                    | 15                               |
|                  |                 |                                  |                              |                                                     |                                          |                                                          |                      | Provided evidence for mobilizing funds for health in the Global Fund proposal. |
| Country          | Year       | Dimension | Factor 1 | Factor 2 | Factor 3 | Factor 4 | Factor 5 | Factor 6 | Total Score |
|-----------------|------------|-----------|----------|----------|----------|----------|----------|----------|-------------|
| Nigeria         | 2015       | 3         | 2        | 1        | 3        | 1        | 3        | 2        | 15          |
| Haiti           | 2013–2014  | 1         | 2        | 2        | 3        | 3        | 2        | 1        | 14          |
| Cambodia        | 2014       | 3         | 2        | 2        | 1        | 2        | 2        | 1        | 13          |
| Botswana        | 2013–2014  | 1         | 1        | 2        | 3        | 2        | 2        | 1        | 12          |
| Indonesia       | 2015       | 3         | 1        | 2        | 2        | 1        | 1        | 1        | 11          |
| Tanzania        | 2013–2014  | 3         | 1        | 1        | 2        | 2        | 1        | 1        | 11          |
| Haryana State   | 2014–2015  | 2         | 1        | 1        | 1        | 2        | 2        | 1        | 10          |
| St. Vincent     | 2012       | 1         | 1        | 2        | 2        | 2        | 1        | 1        | 10          |

**TABLE 1.** Scoring Results from 16 Countries (1 = no/beginning competency of the factor, 2 = developing competency, and 3 = competency)
highest on production (average score = 2.86); however, promoting use received the second highest score (average score = 2.38), followed by demand (average score = 2.36).

Following are selected examples from countries that were among the top scorers in the framework to illustrate the results:

**Ethiopia**
Tailoring analysis and dissemination to different stakeholder needs helped Ethiopia’s health sector to implement reforms that are improving access and quality of health services for its population. Health accounts findings contributed to the introduction of community-based health insurance that currently covers over 14 million of the population. Health accounts was also one of the critical pieces of information used to establish Ethiopia’s revenue retention scheme. “In 2011, the revenue retained accounted for an average of 36% of the total health budget in 146 health centers.” These funds are being reinvested into the facilities to improve the quality of health services.

**Namibia**
Despite a stated policy priority of promoting reproductive health, maternal and child mortality rates increased between 2000 and 2007. The 2008–2009 health accounts found that reproductive health spending comprised only 10% of Namibia’s total health expenditure. Based on these findings, policy makers looked for ways to increase the government’s allocation to reproductive health. In 2013, the Ministry of Health and Social Services developed a roadmap for accelerating reduction of maternal, newborn and child mortality to allocate more funding to maternal and reproductive health. The latest health accounts estimation, for 2014–2015, reveals that maternal and reproductive health now receives the second highest allocation, 22% of total health expenditure, among diseases/priority areas and that government is the largest funder of maternal and reproductive health.

**Barbados**
The Barbados 2012–2013 health accounts showed that non-communicable diseases such as obesity received approximately 15% of spending on health, despite their accounting for 85% of deaths. The resource tracking data reinforced existing efforts by local organizations advocating for a sugar tax. In 2016, Barbados introduced a 10% excise tax on sugary drinks and sugary food. The additional revenue from the tax is slated to be used for health promotion and prevention to reduce the number of deaths due to noncommunicable diseases.

The application of the resource tracking data for policy framework also revealed countries that scored highly but that did not demonstrate tangible examples of policy change. In Burundi, a local technical team that had produced at least four resource tracking exercises convened a diverse range of stakeholders, such as donors, civil society, and government, to disseminate their 2013–2014 health accounts results. The data provided evidence for designing new health financing reforms, including the reform of social health insurance mechanisms established in the 1980s. Following the dissemination event, discussions with policy makers to establish the insurance mechanism began and a roadmap was outlined. However, contested presidential elections in 2015 stalled these discussions and delayed implementation of the new health financing strategy.

**DISCUSSION**
We drew three key conclusions from this analysis.

1. Deliberate efforts by the local country resource tracking team to articulate demand for resource tracking data, produce high-quality data, and promote policy-relevant dissemination significantly increase the likeliness of use for informing policy.

All components of the framework are linked to the use of resource tracking data to inform policy and planning. Countries that used such data to implement a policy change tended to score highly across all three dimensions of the framework with only slight variations in scoring across the three dimensions.

On average, countries scored highest in the “production” dimension, which is reflective of the attention that it has been given by countries and external stakeholders over the last seven decades. The production dimension is arguably the most easily controlled by the local country resource tracking teams, is least subject to political factors, and has typically been the focus of donor support. Resource tracking teams are clearly accountable for producing resource tracking data but are less accountable for identifying clear demand and disseminating the data. However, to be effective, data producers cannot operate without guidance from the key stakeholders who will ultimately use the data. The users of data should be able to clearly define their policy questions; in addition, data producers must be able to facilitate discussion with users to specify these questions and confirm that the data to be generated will address them. Getting this consensus among stakeholders will help to ensure that resource tracking analysis does not remain on the shelf.

Similarly, ensuring thoughtful and tailored dissemination of the resource tracking analysis is important but is sometimes an afterthought. Local teams may have a clearly defined mandate
to produce the resource tracking study but, without proper planning and budgeting, may not have the capacity or resources to develop dissemination materials tailored to key stakeholders. Tailoring and packaging the results for different stakeholders requires a different skill set from technical data analysis. Distilling resource tracking analysis into a format and language that is clear, jargon-free, and accessible helps ensure that the user can understand and apply the analysis.

2. The dimensions are self-reinforcing—performance improves with experience.

The more experience countries have with conducting resource tracking exercises, the more reinforcing the stages are and, generally, the greater the likelihood that the results will be used. For example, Namibia, Ethiopia, Vietnam, and Burkina Faso, some of the countries that scored highest in our framework, have each conducted multiple rounds of health accounts. One exception to this is Barbados, which introduced a 10% tax on sugary foods shortly after conducting its first health accounts exercise. This is partly due to external factors that are discussed in the next section.

3. External factors have a bearing on use of resource tracking data.

In developing and testing our framework, we identified two factors that may be outside of the local country resource tracking team’s control but that can influence whether resource tracking data are used.

a. Political will to improve policy and use resource tracking data to inform the policy process.

Political appetite to reform the health sector can drive use of resource tracking data. For example, Barbados had been concerned with its high and rising burden of noncommunicable diseases for some time and was under pressure to develop strategies and policies to address the disease burden. The health accounts data fell into a fertile environment to advocate for a 10% excise tax on sugary drinks and food to increase investments in health. The Healthy Caribbean Coalition, NCD Alliance, Pan American Health Organization, Ministry of Health, and others were advocating for action on obesity and the Ministry of Finance was receptive to new taxes due to rising national debt.

b. Availability of champions.

In both Ethiopia and Burkina Faso, champions within the senior management of the Ministry of Health pushed for creation of dedicated units with the mandate to generate resource tracking analysis for informing policy and plans. Dedicated teams conduct health financing analyses using multiple datasets to answer specific policy challenges. Zida et al., reviewing Burkina Faso’s institutional structure for health financing analytics, posit that the regulatory framework that authorizes the policy unit to exist and function helped to make this unit effective. In contrast, when the contested presidential elections replaced the champions, Burundi lost its continuity in reforming health financing policy through the use of evidence.

Areas for future consideration of the framework

Based on the application of our framework to country examples, we identified several limitations to this model and areas needing additional development.

1. Our sample was limited to 16 countries. It will be important to test the framework using a larger sample of countries.

2. Though we did solicit feedback from some policy makers, many of our interviews were with technicians who many not always be in the best vantage point to see how data is actually used for policy making—this reflects the challenge of tracking when and how data are used.

3. We recognize that the use of empirical data does not always result in better decisions. Quality of data, quality of analysis, interpretation of results, etc., can produce poor quality decisions even with empirical data. This framework judges all policy use equally and does not consider the quality or merit of the policy itself.

4. Under Dimension 2 (Production), the framework does not currently measure flexibility to respond to changing data requests and changing circumstances. Such flexibility is challenging to quantify but should be considered in a future version of the framework. Similarly, data timeliness can certainly have implications on the use of data because old data may no longer be relevant. We found it challenging to measure the link between data timeliness and policy use and recommend that future iterations of this framework consider how to incorporate a measure of data timeliness.

5. The current framework gives equal weight to each factor because the authors did not have information to objectively assign different weights. It is possible that these factors are not equally influential in determining
policy use; further analysis among a larger sample is required to determine this.

6. The framework highlights the importance of clarity of demand for analysis but does not differentiate among those who might drive the demand; that is, external financial or technical partners versus local stakeholders. As countries’ domestic resources for health increase, it will be important to assess the extent to which local stakeholders are driving the policy discussions and requesting the data needed.

7. Building on this framework, an area for future work is to provide practical examples to resource tracking technicians on how to implement the steps articulated in the framework. For example, what are best practices around building consensus between the producers and users of data? What are the best methods for investing in the technical capacity of the team?

We encourage resource tracking practitioners to consider these areas and others to build upon this framework.

NOTE

[a] Countries represented at the workshop: Afghanistan, Bangladesh, Benin, Bolivia, Bosnia and Herzegovina, Botswana, Burkina Faso, Burundi, Cambodia, Colombia, Costa Rica, Cote d’Ivoire, Dominican Republic, Democratic Republic of Congo, Egypt, Estonia, Ethiopia, Gabon, Ghana, Fiji, India, Kenya, Kyrgyzstan, Lao Peoples Democratic Republic, Liberia, Malawi, Mauritania, Morocco, Namibia, Niger, Peru, Philippines, Sierra Leone, South Africa, Sri Lanka, Tajikistan, Thailand, Trinidad and Tobago, Tunisia, Uganda, Uruguay, Zambia.

DISCLOSURE OF POTENTIAL CONFLICTS OF INTEREST

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REFERENCES

1. Bond LW, Bertrand WE, Mera R. Data for decision making for the health sector project: A mid-term evaluation. Washington (DC): Health Technical Services Project of TvT Associates, Inc. and the Pragma Corporation; 1994.

2. Organization for Economic Cooperation and Development, Eurostat, and the World Health Organization. A system of health accounts 2011. Paris, France: OECD Publishing; 2011. doi:10.1787/9789264116016-en.

3. UNAIDS. National AIDS spending assessment (NASA): classification and Definitions. Geneva (Switzerland): UNAIDS; 2009.

4. Pradhan S. Evaluating public spending: A framework for public expenditure reviews. Washington (DC): The World Bank; 1996.

5. Gurkan A, Kauser K, Voorbraak D. Implementing public expenditure tracking surveys for results: Lessons from a decade of global experience. Washington (DC): The World Bank; 2009.

6. Alebachew A, Yusuf Y, Mann C, Berman P. Ethiopia’s progress in health financing and the contribution of the 1998 health care and financing strategy in Ethiopia. Boston (MA): Resource Tracking and Management Project. Harvard T.H. Chan School of Public Health; 2015.

7. Healthy Caribbean Coalition. The implementation of taxation on sugar-sweetened beverages by the government of Barbados. Bridgetown (Barbados): Health Caribbean Coalition; 2016.

8. Maeda A, Harrit M, Mabuchi S, Siadat B, Nagpal S. Creating an evidence for better health financing decisions: A strategic guide for the institutionalization of national health accounts. Washington (DC): The World Bank Group; 2012.

9. Ackoff RL. From data to wisdom. J Appl Syst Anal. 1989;16:3-9.

10. World Bank. World Bank country and lending groups. 2017. [accessed 2017 Nov 7]. https://datahelpdesk.worldbank.org/knowledgebase/articles/906519.
11. Helmer-Hirschberg O. Analysis of the future: The Delphi method. Santa Monica (CA): RAND Corporation; 1967.
12. Hsu C, Sandford B. The Delphi technique: Making sense of consensus. Practical Assessment, Research & Evaluation. 2007;12(10):1–8.
13. Rodriguez D, Hoe C, Dale E, Rahman M, Akhter S, Hafeez A, Irava W, Rajbangshi P, Roman T, Tirdea M, et al. Assessing the capacity of ministries of health to use research in decision-making: Conceptual framework and tool. Health Res Policy Syst. 2017;15(65):1–13. doi:10.1186/s12961-017-0227-3.
14. Wilkins K, Nsubuga P, Mendlein J, Mercer D, Pappaioanou M. The Data for Decision-Making project: Assessment of surveillance systems in developing countries to improve access to public health information. J R Inst Public Health. 2008;122:914-922. doi:10.1016/j.jpubhe.2007.11.002.
15. World Health Organization. Bridging the “know-do” gap: Meeting on knowledge translation in global health. Geneva (Switzerland): WHO Document Production Services; 2005.
16. Lavis JN, and the Translating Evidence into Action Thematic Working Group. Evidence to action framework. Presented at: 3rd Global Symposium on Health Systems Research; 2014 Sep 30 – October 3; Cape Town, South Africa.
17. Head B. Toward more “evidence-informed” policy making? Public Adm Rev. 2016;76:472-484. doi:10.1111/puar.12475.
18. De S, Dmytraczenko T, Brinkerhoff D, Tien M. Has improved availability of health expenditure data contributed to evidence-based policymaking? Country experiences with national health accounts. Bethesda (MD): Health Reformplus Project, Abt Associates Inc.; 2003.
19. Price J, Guinness L, Irava W, Khan I, Asante A, Wiseman V. How to do (or not to do) translation of national health accounts data to evidence for policy making in a low resourced setting. Health Policy Plan. 2016;31:472-481. doi:10.1093/heapol/czv089.
20. Health Finance and Governance Project. Health accounts peer-learning workshop: Summary of key themes and discussions. Bethesda (MD): Health Finance and Governance Project; 2017.
21. Health Finance and Governance Project and World Health Organization. Poll Everywhere survey results from Health Accounts Peer Learning workshop. Geneva (Switzerland): Health Finance and Governance Project; 2016.
22. Health Finance and Governance Project. HFG at Work in Ethiopia. 2017. [accessed 2017 Nov 12]. https://www.hfgproject.org/where-we-work/africa/ethiopia/.
23. Management Sciences for Health. Health care financing reform in Ethiopia: A path to sustainable financing while improving quality and equity. 2017 [accessed 2017 Nov 12]. https://www.msh.org/resources/%EF%BF%BChealth-care-financing-

reform-in-ethiopia-a-path-to-sustainable-financing-while-improving.
24. Health Finance and Governance Project. Revenue retention improves quality of care at Addis Ababa health center. 2017 [accessed 2017 Nov 12]. https://www.hfgproject.org/revenue-retention-improves-quality-care-addis-health-center/
25. Government of Namibia, Health Systems 20/20 Project, World Health Organization, UNAIDS. Namibia health resource tracking: 2007/08 & 2008/09. Bethesda (MD): Health Systems 20/20 Project, Abt Associates Inc.; 2010.
26. Ministry of Health. Roadmap for accelerating reduction of maternal, newborn and child mortality, 2013–2016. Windhoek (Namibia): Namibia Ministry of Health; 2013.
27. Namibia Ministry of Health and Social Services. Namibia 2014/15 health accounts report. Windhoek (Namibia): Namibia Ministry of Health; 2017.
28. Ministry of Health. Barbados 2012–13 health accounts. Bridgetown (Barbados): Barbados Ministry of Health; 2014.
29. Institute for Health Metrics and Evaluation. GBD profile: Barbados. 2017 [accessed 2017 Nov 9]. http://www.healthdata.org/Barbados.
30. Theodore K. Research on effectiveness of taxation on alcohol, tobacco and sugar-sweetened beverages in the Caribbean. Paper presented at: Caribbean Sub-regional Workshop on Alcohol, Tobacco and Sugar-Sweetened Beverages Taxation; 2017 May 16; Bridgetown, Barbados.
31. Bayarsaikhan D, Musango L. Health financing issues and reforms in Africa. Int J Healthcare. 2016; 2(2):37–44. doi:10.5430/ijh.v2n2p37.
32. UHC Partnership. Couverture Sanitaire Universelle. 2014. [Accessed 30th October 2017]. http://uhcpartnership.net/appui-a-lelaboration-dune-strategie-de-financement-de-la-sante-au-burkina-faso-2/
33. Free healthcare for the poor: One lakh brought under pilot project; scheme to cover all in phases by 2032. The Daily Star (Bangladesh). 2016 Mar 25. [accessed 2017 Nov 14]. http://www.thedailystar.net/frontpage/free-healthcare-ultra-poor-1199365
34. Ministry of Health. Vietnam 2013 general health accounts and disease expenditures with sub-analysis of 2013 HIV/AIDS expenditure. Hanoi (Vietnam): Vietnam Ministry of Health; 2016.
35. Health Finance and Governance Project. In Vietnam, quantifying needs and domestic resources for HIV and AIDS treatment. 2017. [accessed 2017 Nov 2]. https://www.hfgproject.org/vietnam-quantifying-needs-and-resources-for-hiv-and-aids/
36. Zida A, Lavis J, Sewankambo N, Kouyate B, Moat K. The factors affecting the institutionalization of two policy units in Burkina Faso’s health system: A case study. Health Res Policy Syst. 2017;15(62):1–15. doi:10.1186/s12961-017-0228-2.
## APPENDIX A. SCORING GUIDE

| Dimension | Level 1 Beginning | Level 2 Developing | Level 3 Competency |
|-----------|------------------|-------------------|-------------------|
| **Demand for Resource Tracking Analysis** | | | |
| Clearly define the problem that the resource tracking data should address | Problem to be addressed has not been identified | A general problem has been identified but it has not been clearly defined to shape the analysis | Problem has been clearly defined |
| Effective consensus building between the users and producers of resource tracking data from the beginning to ensure common understanding of the problem and the data analysis needed to address that problem; for example, is there a functional steering committee in place to facilitate these discussions? Have key stakeholders committed to supplying data to the study? | The users and producers have had no discussion around the problem to be analyzed | Users and producers have had some discussions but consensus around what is needed has not been reached | Users and producers have consensus around the problem to be analyzed |
| **Producing High-Quality Resource Tracking Analysis** | | | |
| Level of technical capacity of local team to ensure production of high-quality data; for example, are there sufficient staff, is there a multidisciplinary team with sufficient technical capacity? | No local team with the capacity to ensure production of high-quality data and analysis | Some capacity of local team to ensure production of high-quality data and analysis | The necessary local team with the capacity to ensure production of high-quality data and analysis |
| The credibility of the organization producing the resource tracking data matters; for example, has the organization conducted similar studies in the past? Does the organization have an official mandate without which the data quality might be affected? | Producing organization has no previous experience or a poor reputation for producing resource tracking analysis | Producing organization has some experience and credibility for producing resource tracking analysis | Producing organization has the necessary credibility for producing the resource tracking analysis |

(continued on next page)
| Dimension                                                                 | Level 1 Beginning                                                                 | Level 2 Developing                                                                 | Level 3 Competency                                                                 |
|--------------------------------------------------------------------------|----------------------------------------------------------------------------------|----------------------------------------------------------------------------------|----------------------------------------------------------------------------------|
| **Promoting Use of Resource Tracking Analysis**                          | Packaging resource tracking data so that it is policy relevant and prompts policy discussions | Resource tracking data are available for informing policy/strategic planning but not in a policy-friendly format; for example, lengthy and in highly technical jargon and narrative not conducive to policy analysis | Some analysis of resource tracking data provided to inform policy/strategic planning | Targeted policy-relevant packaging of the resource tracking data produced |
| Ensuring that resource tracking data gets to the right people (effective dissemination) | No dissemination                                                                   | Generic (nontargeted) dissemination of the results for multiple stakeholders     | Active and targeted dissemination of the key stakeholders                         |
| Incorporate health financing indicators into government health system performance reviews to encourage use of resource tracking data | No financial indicators incorporated into the annual review process of the health sector performance | Limited financial indicator embedded to gauge the health sector performance        | Key financial indicators embedded into performance indicators of sector development programs; monitoring strategic plans |

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