WATER LAW'S UNTAPPED POTENTIAL FOR SUPPORTING WATER SECURITY IN DEVELOPING COUNTRIES

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Water law's untapped potential for supporting water security in developing countries

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Abstract

Water law is an important part of the full picture of good governance necessary for achieving water security in the long term – along with effective institutions, the capacity to protect and manage water resources, and many other factors. Recognizing the foundational role played by water law, analysis of a new global dataset on water law produced by the World Bank's *Enabling the Business of Agriculture* (EBA) project can provide new insights into how this foundation is limited or missing in many countries facing severe water-related challenges.

This paper introduces three examples of how the new EBA dataset can be used by practitioners to support countries as they pursue water security. First, the data can be used to support the development of new conceptual models for cross-learning between countries. Kenya, Malawi, Mozambique, and Ethiopia are highlighted below as examples of how models can help to highlight different legal approaches across countries. Second, the EBA dataset can be useful for the identification of peer countries facing similar situations. Such identification of peer countries can also serve to increase the relevance and value of developing conceptual models for cross-learning. Côte d'Ivoire serves as an example to highlight a possible approach for country advisors to identify contextually-relevant peer countries. Lastly, it is suggested that EBA data can be used in conjunction with context data to identify countries at the global level where there is particular untapped potential for water law to further support sustainable water management. Those countries with relatively limited water availability per capita and less comprehensive legal frameworks are highlighted as having higher untapped potential.

Keywords: Law, legal framework, sustainable water management, water security

1. Introduction

To put it simply, water and agriculture are intrinsically linked - water is a fundamental input for agriculture and agriculture has critical implications for water (Pimentel, et al., 2004). This link between water and agriculture can either be supported by, or constrained by a country's legal framework. The legal framework, along with strong institutions and policies, becomes all the more critical as challenges at the intersection between water and agriculture are exacerbated by a range of global trends. The natural challenges are substantial, and these have often been made more difficult by failures in water management and the underlying policies, legislation and institutions (Vapnek, et al., 2009).

In response to these failures, there is growing high-level political motivation for *sustainable* water management. Sustainable water management is inclusive, efficient, productive and environmentally sound (WWAP, 2015). Sustainable water management is in line with Goal 6 of the Sustainable Development Goals, which calls for sustainable water withdrawals (Target 6.4), integrated water resources management (Target 6.5), and the protection of water-related ecosystems (Target 6.6), among others. The importance of pursuing sustainable water management was recently affirmed in the *Durban Political Declaration* (2017) and in the *Action Plan of the UN High Level Panel on Water* (2016). However, significant hurdles remain in translating that motivation to

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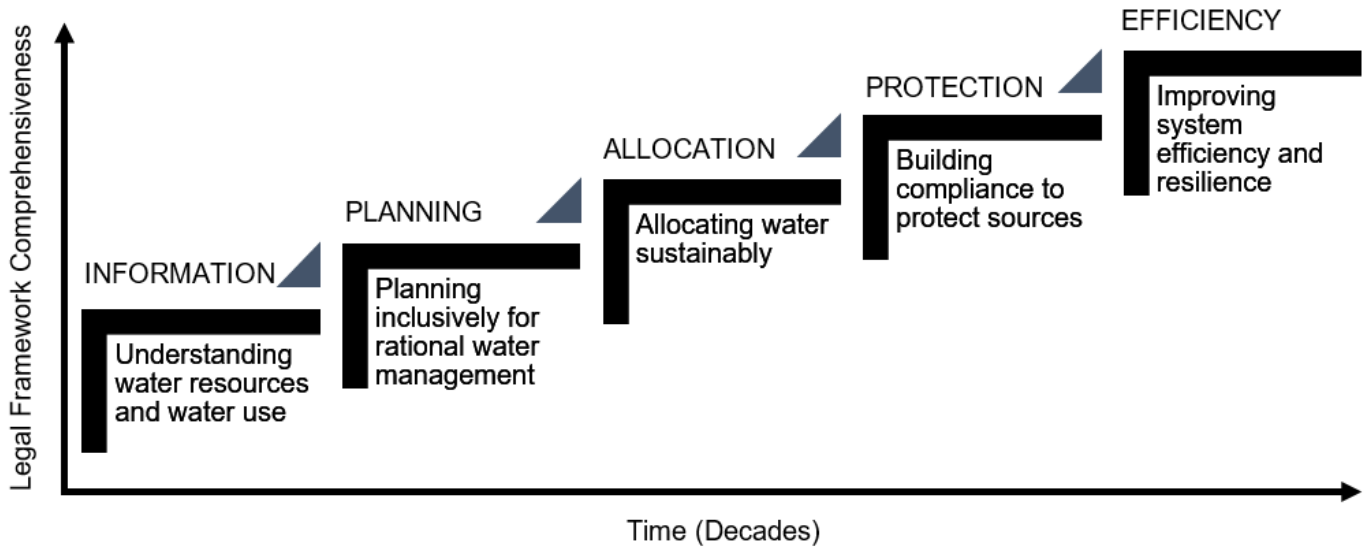

Figure 1. Example model for cross-learning on law for water and agriculture.

action. In particular, the role of law in achieving sustainable water management is under-researched, and up to this point there have been relatively few guidance resources available for countries that wish to learn from each other's experiences.

However, a new dataset on water management has just recently been published under the World Bank's *Enabling the Business of Agriculture* (EBA) Project.[2] The EBA water dataset examines selected elements of the legal framework that may impact on water resources approach involving both in-house legal research and assessment, and inputs and corroboration from knowledgeable contributors in the form of survey responses. The resulting dataset was then validated by government counterparts. It is planned to update the dataset on a biannual basis going forward, and to add new countries for each cycle.

This paper briefly introduces three examples of how the new EBA water dataset could be used by practitioners to support countries as they pursue sustainable water management. First, **Section 2** explores how the EBA data can be used to support the development of new models for cross-learning between countries. As discussed in **Section 3** below, the EBA dataset can also be used for the identification of peer countries facing similar situations, thereby supporting the identification of options or pathways for countries to consider. Lastly, in **Section 4**, it is suggested that EBA data can be used in conjunction with water resources data to identify countries at the global level where there is particular untapped potential for water law to further support sustainable water management.

management and individual water use for irrigation. Data have been collected to identify the presence or absence of 44 legal elements within domestic legal frameworks in 62 countries spread across regions, income groups, and hydrologic contexts. Beyond the legal framework, the dataset also includes five additional data points which collect basic information on the extent of implementation of basin institutions, basin-level planning, water resources inventories, water user registries, and water resources monitoring. Information was collected through a hybrid

2. Developing new models for cross-learning

Two critical objectives in supporting countries as they pursue sustainable water management are to: (1) identify the core globally-relevant issues where the legal framework can play a role in supporting sustainable water management; and then (2) identify countries that face similar challenges. Understanding which examples are relevant is critical for cross-learning because one of the most important qualities of a country's legal framework is its ability to meet the specific needs presented by the relevant context (Shah, et al., 2014). Moreover, legal frameworks and their gradual reform over time will naturally reflect each country's legal history, legal and constitutional structure and political context (Caponera, 1992).

[2] Full data and further information about the EBA project are available at http://eba.worldbank.org.

In support of these objectives, it is proposed that the EBA water data points can be selected by researchers and advisors to feed into new models for cross-learning between countries. For example, **Figure 1** above presents one possible model for incorporating EBA water data into five shared building blocks which allow for cross-learning across a full range of different approaches according to country context. Working from the approach of several recent studies, each building block is a simple, globally-relevant policy objective which is critical for supporting sustainable water management (De Stefano, et al., 2014) (Svendsen, et al., 2005) (Havekes, et al., 2013) (Araral & Yu, 2013) (Saleth & Dinar, 2004). Each building block is then underpinned by 8 – 12 legal data points from the EBA water dataset. Each selected EBA data point examines whether countries have put in place common legal provisions that support the policy objective for that building block. The proposed allocation of EBA water data points in this example model is displayed in **Table 1** as an **annex** at the end of this document.

Conceptually, the illustrative model shown above is structured as a sequence of logical relationships, where the first building block shown above – understanding water resources and water use – is taken to be a logical precursor and foundation for supporting each of the other building blocks. For example, efforts to develop a modern water permitting system for water allocation may face elevated failure risks if water managers and water users lack adequate information about the resource and water users, and if water development and management is not guided by rational planning efforts. Similarly, at the most complex end of the chain, features of highly-developed systems (e.g., resource pricing and formal water markets) are largely irrelevant without a strong foundation starting with water information systems, planning, allocation, and protection through strong compliance. This model recognizes that the development of a strong and context-appropriate system for water management is a long process even under the best conditions. As has been well-stated, "[t]here is no shortcut for a poor society to

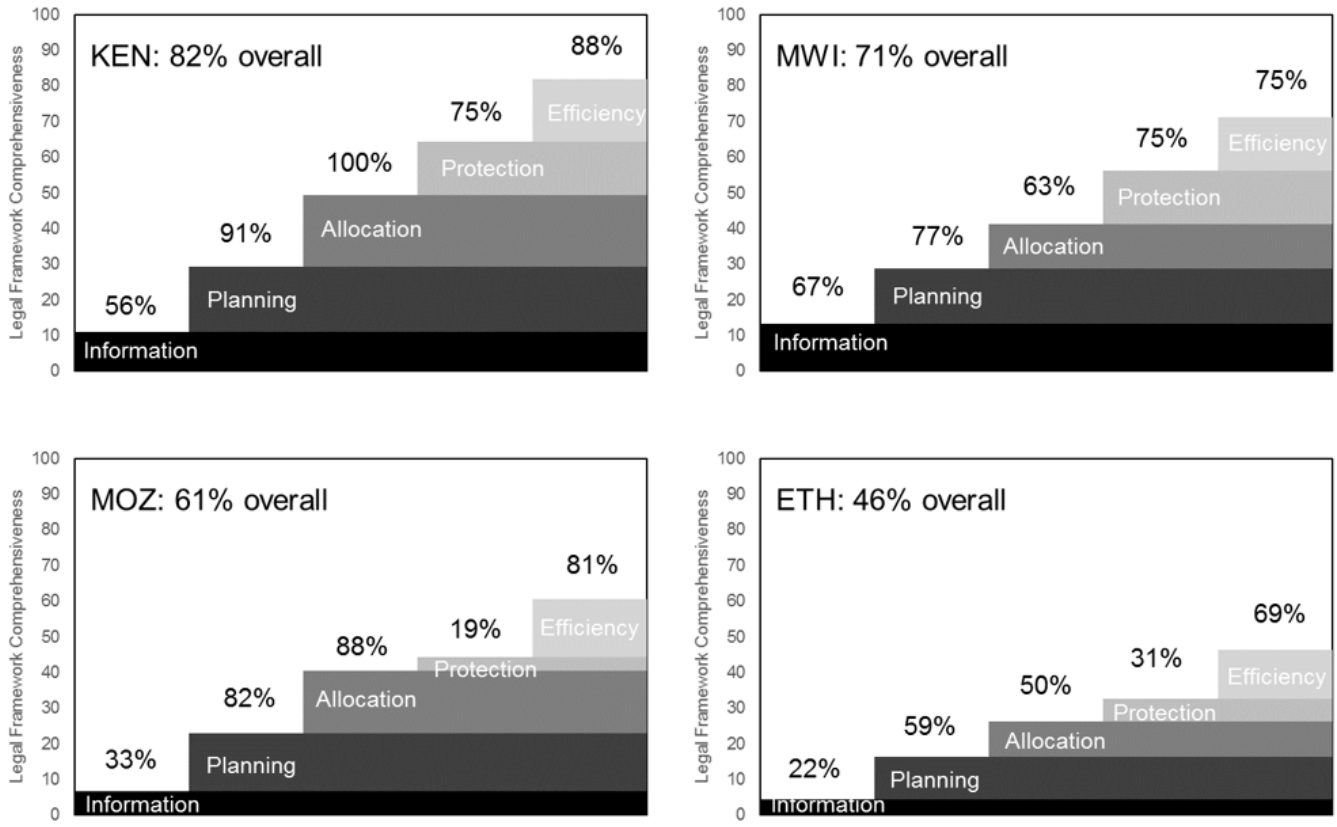

Figure 2. Selected examples of legal framework comprehensiveness using EBA water data – Kenya (KEN), Malawi (MWI), Mozambique (MOZ), and Ethiopia (ETH).

morph its informal water economy into a formal one" (Shah & van Koppen, 2016).

To apply the EBA water data to this illustrative model, the EBA water dataset also includes a quantitative indication of the presence or absence of each legal element covered (a numerical "score" between 0 and 1). Scores for each legal element can be aggregated at the level of each of the building blocks displayed in **Figure 1** above to give a percentage of legal elements which are present. This can then be aggregated one more time by averaging the percentages for each of the building blocks to provide a proxy indication of the level of comprehensiveness of a country's legal framework for water. As an example, **Figure 2** above highlights the different approaches of the legal frameworks of four countries in Africa – each with a relatively comprehensive, modern legal framework for water. Kenya and Malawi each provide broad legal support to each of the suggested model's building blocks. Mozambique and Ethiopia also have relatively comprehensive legal frameworks, but with noticeably fewer legal provisions supporting the information and protection building blocks.

In summary, it is suggested that such models for cross-learning, when supported by EBA water data for 62 countries, can provide important insights for countries seeking to learn from each other's experiences in how to support sustainable water management with law. Models can help to link the presence or absence of discrete legal provisions "on the books" to simple policy objectives that governments may choose to pursue in the context of their national priorities, the Sustainable Development Goals and numerous international initiatives in the water sector. Models also allow for the quantitative tracking of trends and features in legal frameworks over time – to better understand new approaches. Finally, it is recommended that principles addressed in the following section concerning identification of peer countries can be used to maximize the value of models for cross-learning.

3. Identifying peer countries for cross-learning

There are many possible case study examples available around the world, but where does one start? This paper proposes that available data describing a country's national water resources situation and socio-economic situation can be used in conjunction with EBA water data to identify peer countries for cross-learning and the selection of relevant examples of legal provisions. For the purposes of this discussion, peer countries share similar characteristics across one or more hydrologic, geographic or socio-economic factors. Identifying peer countries for comparison is a critical function of technical and legal advisors to national governments.

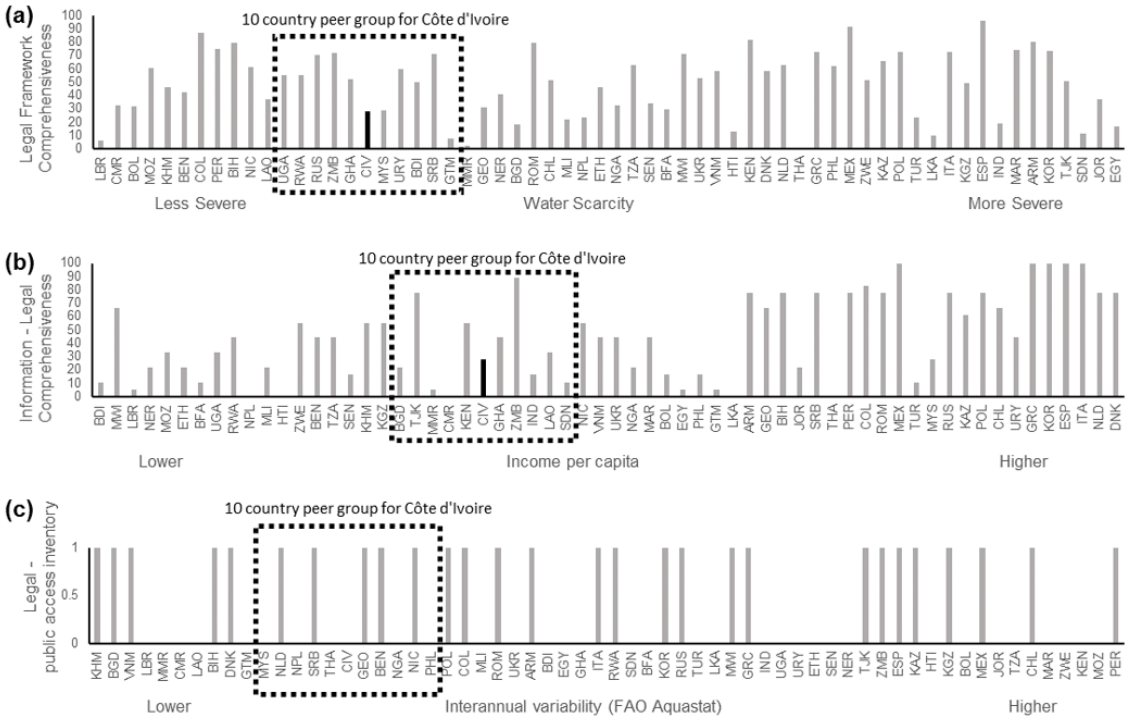

Figure 3. Identifying peer countries for comparison with Côte d'Ivoire based on: **(a)** water scarcity and legal framework comprehensiveness; **(b)** income per capita and legal provisions supporting water information; **(c)** inter-annual variability and the presence of a legal requirement for a water resources inventory to be made publicly available (EBA; FAO 2016).

Figure 3 illustrates three examples of how EBA water data could be used in conjunction with additional datasets to identify potential peer countries for cross-learning. Côte d'Ivoire serves as an example below with: (a) an examination of the overall comprehensiveness of its legal framework for water; (b) a deeper analysis of one of the building blocks addressed in Figure 1 above – information; and (c) an even deeper analysis of a specific single legal element within the information building block – a requirement that a water resources inventory be made publicly available.

In **Figure 3(a)**, Russia, Zambia, Uruguay, and Serbia share similar levels of water scarcity to Côte d'Ivoire, but have more comprehensive legal frameworks for water. Thus, if concerned about water scarcity, Côte d'Ivoire may wish to first examine the legal frameworks of those peer countries as a starting point for comparison. In **Figure 3(b)**, Tajikistan, Kenya, and Zambia may be helpful examples to consider first if concerned about income-appropriate water information-related frameworks. Finally, in **Figure 3(c)**, if Côte d'Ivoire is concerned about public access to a water inventory, it may wish to examine the legal provisions pertaining to water inventories in countries with similar levels of inter-annual water variability, such as Georgia, Benin and Nicaragua. Multiple factors may be used in combination to further select and prioritize initial countries for cross-learning – such as combining income and water scarcity. Moreover, peer groups of any size may be delimited based on a range of water resources characteristics and socio-economic factors, depending on a given country's challenges and priorities.

4. Screening for untapped potential for reforms

Water security is strengthened by sustainable water management, which in the simplest terms means doing the best you can with what water you have (WWAP, 2015). A country's legal framework has the potential to play a foundational role in sustainable water management (Grigg, 2011) (Mechlem, 2016) (Vapnek, et al., 2009). Law is not the only factor, and it is possible to undertake many of the activities that make up modern water management without a legal basis. But, like a house in an earthquake, the value of the legal framework as a foundation becomes all the more apparent during times of reduced funding, or increased water scarcity, variability, and pollution. This is because law sets the contours for government activities and private actions, and can provide stability and certainty through changing moods and funding levels. Law supports durable practices over the long term, not just one-off initiatives.

Therefore, it is suggested that water resources data and socio-economic data can also be used in conjunction with EBA water data to screen for countries where improvements in the legal framework could take on heightened importance and relevance because of particularly challenging contextual factors. This can provide a valuable preliminary screening tool for development assistance organizations seeking to understand relative needs across countries and contexts. After screening, it is necessary to undertake a deeper legislative assessment at the national level to understand the details of national priorities, needs and existing legal provisions.

As one example, countries that fall within the shaded quadrant in **Figure 4** below have both a relatively low level of available water resources per capita and a relatively less-comprehensive legal framework as measured by the legal elements included within the EBA water dataset. Under the measures above, 16 countries fall within the shaded quadrant demonstrating particular untapped potential – where a more comprehensive legal framework could provide additional support to improvements in sustainable water management. Highlighting the particular untapped potential for developing countries, 14 of these 16 countries are classified as either low income or lower-middle income countries. But, just because a country does not fall in the shaded area does not mean that it does not have reason to consider its legal framework for water. For countries that fall within the bottom-right quadrant, there may be ongoing trends which are not visible here which will make a more comprehensive legal framework even more critical in the future. Conversely, countries that fall in the top-left quadrant still have incentive to evaluate their legal framework – even if already comprehensive – in light of the relative challenges they face in water availability per capita.

Critically, this is just an initial screening exercise, and it is necessary to then do a deeper analysis to understand the full context of each country. Moreover, it is possible to

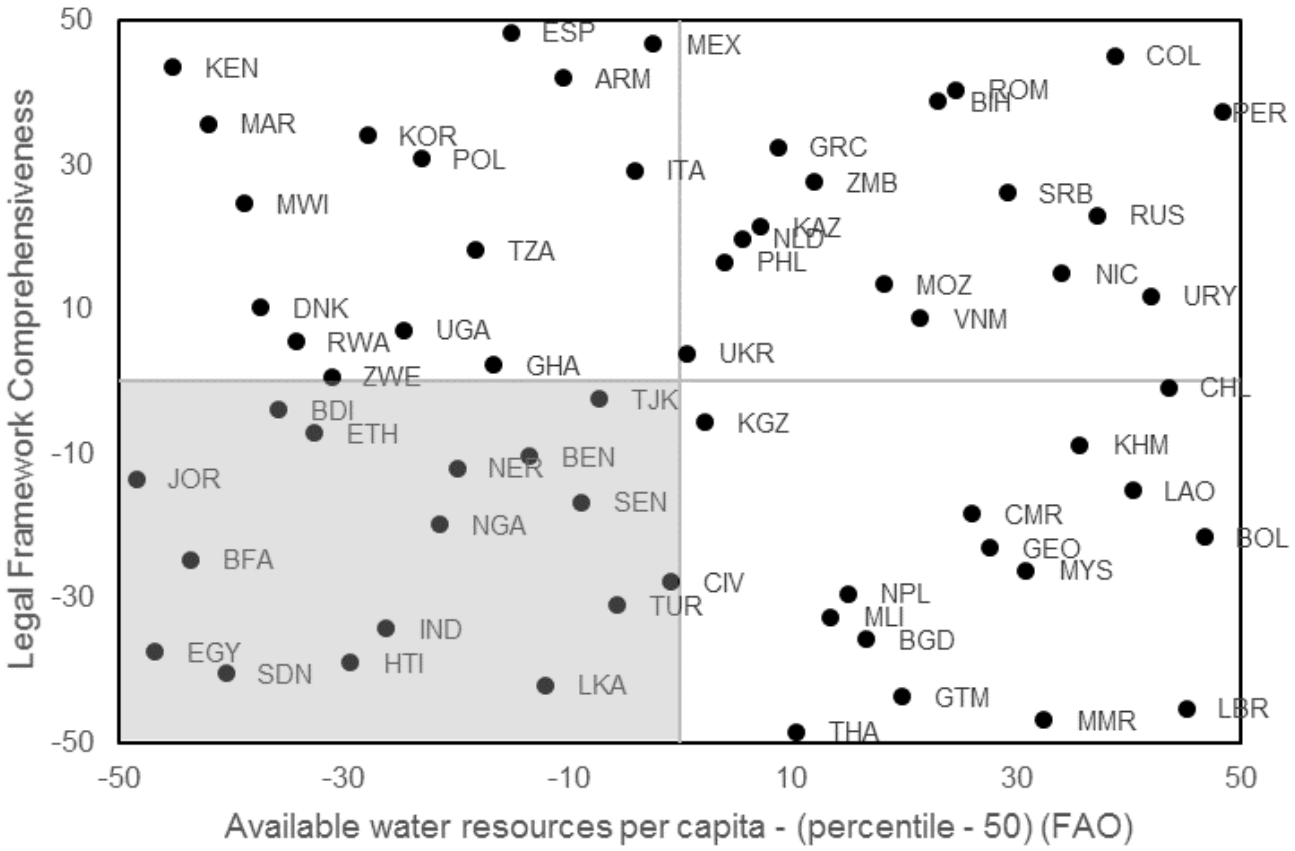

Figure 4. Contrasting available water resources per capita (FAO Aquastat) with legal framework comprehensiveness (calculated from EBA Project data and FAO Aquastat data (2016)).

develop such charts to contrast legal framework comprehensiveness with many types of hydrologic, geographic, and socio-economic data to build a more comprehensive map of countries where there is significant untapped potential for the role of law in water security.

5. Conclusions

There is a growing recognition of the role that the legal framework can play as a foundation for sustainable water management, particularly when it comes to agricultural water use. This role is particularly important for developing countries and those facing more severe water challenges. But, because many developing countries face the most severe water challenges, this is where there is still the largest untapped potential for improvements in the legal framework. In order to strengthen legal frameworks, comparative analysis and cross-learning can help countries to understand options and examples that have been tried by others. The above discussions illustrate how it is possible for countries to identify relevant examples to consider and potential pathways forward by interpreting EBA water data in conjunction with water resources data and socio-economic data. Further research and exploration is needed to fully develop the examples above as ready-made tools for governments and advisors. Following that initial exercise, it is then necessary to undertake a deeper assessment of the country's full legal framework, contextual needs, priorities, and objectives.

6. Acknowledgements and Disclaimer

This paper utilizes published data produced by the World Bank's *Enabling the Business of Agriculture* (EBA) project. It presents exploratory concepts and ideas for using that data, and it reflects the views of the authors only. It does not necessarily reflect any opinion on the part of the EBA project, the World Bank Group or its member countries.

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Annex - Table 1. Allocation of EBA water data points to suggested building blocks model.

INFORMATION - Understanding water resources and water use
Water resource inventory: a mandate for the development of a water resources inventory
Water user registry: a mandate for the creation and maintenance of a registry of water users
Monitoring: a mandate for water resources monitoring
Inventory updating: a requirement to update the water resources inventory on a defined basis
Public availability of inventory: a requirement for the inventory to be made publicly available
Public availability of registry: a requirement for registry information to be made publicly available
Monitoring plan: a mandate for the development of a water resources monitoring plan
Monitoring plan updating: a requirement to update the monitoring plan on a defined basis
Public availability of monitoring results: a requirement for monitoring results to be made publicly available
PLANNING - Planning inclusively for rational water management
Groundwater management: a mandate to manage groundwater resources
Basin institutions: support for the creation of institutions to manage water at the basin level
Basin institution functions: a specification of the functions of basin institutions
Organizational structure: a specification of the internal organization of basin institutions
Representation of water users: mandatory representation of water users in water management institutions
National water planning: a mandate for national water planning
Basin planning: a mandate for basin planning
Basin plan components: a specification of the required components of basin plans
Public consultations: a requirement for public consultation during the preparation of basin plans
Basin plan updating: a requirement to update basin plans on a defined basis
Plan compliance: a provision making basin plans binding over allocation decisions
ALLOCATION - Allocating water sustainably
Permit and declaration systems: a requirement to obtain a permit before abstracting and using water for irrigation
Priority orders: a definition or a requirement to define a priority order for allocations
Permit application procedures: a specification of the procedures necessary to apply for a permit
Pre-decision public notice: a requirement for pre-decision public notice of permit applications
Public notice duration: a specification of the required duration of public notice
Public notice means: a specification of the acceptable means of public notice
Permit duration: a specification of the duration of permits
Permit renewal: a specification of the renewal procedure for permits
PROTECTION - Building compliance to protect sources
Standard permit conditions: mandatory standard permit conditions
Record keeping: a requirement for water users to keep records of the amount of water abstracted
Inspections: powers for inspections for compliance of water-related obligations
Offenses for violations: a specification of key water offenses and penalties
Special measures for water stress: defined powers to take actions in case of water shortage
Legal effects of special measures: powers to curtail permits and restrict new issuances in case of water shortage
Formal drought declarations: a requirement for a formal drought declaration before curtailing permits
Water quality standards: a prescription of water quality standards for irrigation
EFFICIENCY - Improving system efficiency and resilience
Conservation and efficiency: specific mechanisms for the promotion of water conservation and efficiency
Obligation to pay: an obligation on water users to pay charges for abstraction
Setting charges: a mandate to set charges for water abstraction
Charge calculation: a specification of how water charges are to be calculated
Collecting charges: a mandate to collect charges for water abstraction
Permit transfers: a specification that permits are transferrable
Transfer notification: a requirement to notify the government in the event of a transfer
Transfer procedures: a specification of procedures for transferring permits