

ENHANCING INTEGRITY IN WATER GOVERNANCE IN MOROCCO: OPPORTUNITIES AND CHALLENGES

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ABSTRACT – This paper examines Morocco's effort at enhancing integrity in the water sector using stakeholder analysis, exposition concerning the major structures governing water, and structured encounters with stakeholders. Using field work, participant observation and direction interaction with the various stakeholders, the paper finds that the process of improving integrity in the Moroccan water sector is underway and is at the awareness raising stage. Deeper questions that deal with competencies related to transparency, working with civil society and the media remain challenges that are in the process of being articulated in order to be addressed.

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INTRODUCTION

Morocco is confronted with the problem of development and sustainable management of its water resources. The country has been undergoing alternating sequences of high runoff and droughts of varying intensity and duration. The most severe drought periods, that hit the country, were in 1944-45, 1980-85, 1991-95, and 1998-2002 (Areikat, 2014). Soon after independence, Morocco started dealing with the water management issues, as these were considered essential for its social and economic development. There was a program to irrigate one million hectares in the 1970s. As a result of dealing with the inevitable limits of technology concern for better organization and management of water resources has emerged. As the threat of climate change became more apparent, improved water resource management became a more urgent priority. The country's average annual rainfall is of over 1,000 mm in the North and less than 300 mm in the South. Morocco receives an average of 140 Billion m³ (BCM) of water from precipitation per year (Bouchaou et. al., 2011, p. 133). The volume of utilized water resources, under current technical and economic conditions, is estimated to be 22 BCM/year (18 BCM from surface water and 4 BCM from underground water). Morocco has 135 dams with a total capacity of 17.5 BCM, and 14 others being under construction (2.6 BCM). In addition, 13 systems of groundwater transfer from one river basin to another were constructed. Each of the nine river basins is under the jurisdiction of a river basin agency. The successive droughts of the 1980s and early 1990s led to deeper consideration of the structural and natural constraint facing the country. In addition to the quantitative problem of the water reserves, Morocco also suffers from the declining quality of its water resources, both surface and underground. The domestic and industrial wastewater discharge along with the widespread use of fertilizers and pesticides in agriculture contribute to the pollution of the sources of available water in the country. Despite the authorities' efforts, proposed solutions have proven to be insufficient. Enhancing water management took an added urgency due to climate change and the overuse of water (World Bank Group, 2018, pp. 28, 46-47).

As a result, a new law on water was adopted in 1995 (Law 10-95). Water management was decentralized to new regional entities, the Basin Agencies. The new law intended to establish sustainable, decentralized, participative and integrated water management in the country. The basin agencies' boards of directors include representatives of different ministries and other institutions acting on water, including water users' associations. The basin agencies boards include representatives of chambers of commerce, industry and services (42 per cent of the membership), local assemblies, tribal communities and water users' associations (33 per cent of the membership) and the state bodies involved in water services (25 per cent of the membership). The basin agencies have full jurisdiction concerning their respective river drainage areas and supervise the development, management and conservation of its water resources. The water law of 1995 lays down the following water management principles:

- Water is a public common good.
- Diverse water resources need different management strategies.
- Water has an economic value.
- The country's principle of national and regional solidarity means that water is human right.
- Transparency should govern water management dialogue.

No law is self-implementing, and there are many challenges that need to be addressed, and these have to do with financial and human resources of these agencies. The law's success relies on the contribution of all actors involved in the management and use of water resources. The Benkirane administration launched a legislative program for the water sector for its current mandate period of 2012-2016. It includes a bill amending and supplementing the 10-95 water law, whose objective is to strengthen the legal, institutional and regulatory framework governing the country's water resources (Kingdom of Morocco, 2016). Elements promoting sustainable development aspects are included in the bill, such as better protection of groundwater resources, preservation of water quality, rainwater harvesting, stakeholder-based aquifer management, and the development of unconventional water resources. Despite the significant progress under the 10-95 water law, water governance and management still need further improvement. In order to make this sector more efficient, several projects need to be completed concerning the strengthening of decentralized management, building the capacity of administration, the clarification of the role and responsibilities of the various stakeholders, the improvement of cost recovery for both irrigation and drinking water, and finalizing the legal framework for water resources. The capacity building programs should include improved human resources as well as the financial means necessary for water desalination, wastewater reuse, aquifer artificial recharge, rainwater harvesting, management of aquifer contracts, among other projects. Other more pressing problems include the lack of transparency, corruption and malpractice. Solving these problems will enhance trust between the different stakeholders and improve water management, which would lead better lives, and the development of agriculture and industry.

METHODOLOGY

This paper uses both secondary and primary sources. It includes a review of relevant documentation and literature from diverse sources. Publicly available data was gathered from the websites of government ministries, schools and universities, businesses, professional associations, and NGOs. In addition, field work comprising of visits and interviews with relevant key stakeholders were conducted in Morocco's capital on the Atlantic Ocean, Rabat, and in the large inland city of Fes in the Middle Atlas Mountains, using the questionnaire developed, used by colleagues in Jordan, and shared through the International Union for the Conservation of Nature (IUCN). Discussions with water stakeholders led to some very frank and open exchanges over water sector and management in Morocco. Much of the focus was on the risks of corruption as well the lack of transparency and accountability in the water governance process. We asked them about the policies, procedures and processes they use to insure transparency, and we followed up by organizing a workshop to facilitate further exchange of information. The workshop was an opportunity to bring out the issue of integrity with regard to water, from the perspective of the various stakeholders, it allowed for more interaction with the different stakeholders, some of whom were interviewed by the research team. The workshop, like this paper, was part of a SIWI grant to train Moroccan cadres, NGO activists, the press, and women with regard to addressing the issue of integrity. The questions dealt with the respect of the integrity issues, or lack of it, at different human resource levels as well as the tools used to minimize the risk and account for any misconduct or malfunctions. They tried to address mainly every other stakeholder in the process. The workshop was preceded with interviews of the various stakeholders involved, including:

- An officer of the Hydraulic Basin Agency of Saiss in Fes (ABHS).
- The president of the Central Authority for Corruption Prevention (CACP).
- The director of the Institute of Water and Sanitation at the ONEE.
- The coordinator of the Water Integrity Program at the ONEE: ONEE is currently running a program with the German International Cooperation Agency (GIZ).
- The coordinator of the UNESCO Chair on Water, Women, and Power.
- The head of staff at the Delegated Ministry of Water.
- The director of water management at the Delegated Ministry of Water.
- Professors from universities of Casablanca and Meknes.
- The president of a Water Users' Association in Saiss Basin, Fes.
- The coordinator of water projects at the European Union representation in Morocco.
- Graduate students from Al Akhawayn University in Ifrane.
- The proprietor of a well-digging company.
- An officer of a water service consulting firm.

All interviewees were informed about the intended purposes of the research project and the planned workshops and consented to participating in this effort.

The Consultation Workshop

In September 2014, we held a consultation workshop at Al Akawayn University in Ifrane. The objective of the workshop was to discuss issues related to water integrity risks with an emphasis on improving the quality of governance within the national context. The workshop was inaugurated by the Right Honourable Mrs. Charafat Afailal, Minister in Charge of Water, Prof. Driss Ouauoucha, the President of Al Akhawayn University, and Mr. Abdessalam Abouddrar, the CACP President. Among the attendees were various stakeholders from Moroccan ministries, NGOs, government agencies, transparency and corruption agency, associations, and experts from academia. The workshop revealed that this is a very difficult topic to breach with the bureaucracy, but that it can be done. The main tool was to develop a map

outlining the risks to the water supply as well as to the bureaucracy itself in terms of integrity. The remaining question was the means with which buy-in can be achieved.

The workshop was able to propose a roadmap for achieving the objectives of SIWI water integrity project in Morocco. The roadmap included water risk mapping, design of a training and capacity building program of actors that will be responsible for improving transparency, accountability, and participatory practices in water management at different governance and management levels. These topics are about bringing around an environment where corruption can be discussed without it becoming a threatening topic that invites non-cooperation. We needed to have a common approach to the issue of integrity, and the roadmap was a way to achieve a single narrative surrounding the issue of integrity. The vital role of the media was also discussed and its integration into the process was regarded as vital. Finally, the workshop developed a consensus that automated, information technology driven, processes can reduce petty corruption significantly.

RESULTS AND DISCUSSION

By establishing the Central Authority for Corruption Prevention in 2007 and the Council of Competitiveness in 2008, the Moroccan state acknowledged that corruption is a serious issue and that it needs to take a proactive approach in enhancing integrity. Aside from the obvious problems with poverty and ignorance as sources of corruption, the larger issue is the role of unearned rents in the society (Jellal et Bouzahzah, 2012). While only 14 percent of private firms reported having to make “informal” payments to officials, according to the World Bank, the impact of corruption was significantly larger than those of peer countries, with the average bribe being about 2000 USD for a trade license. It was estimated that corruption cost the Moroccan economy about 1.5 billion USD in 2007 (Bryane et al., 2003).

Several actions aimed at improving transparency were undertaken since 2006. In 2010, the government produced a plan with forty measures, including the protection informers and channels for the public to report malpractices. In order to ensure a widespread implementation of the plan, the government launched an anti-corruption campaign targeting the administration and the public in 2012. Civil society and the media are playing an important role in the fight against corruption. The private sector is involved in this initiative through the General Confederation of Moroccan Enterprises (CGEM) which formed an anti-corruption committee in 2006. CGEM also joined efforts with public authorities, the CACP and other partners to produce a Moroccan Code of Good Practice for Corporate Governance and to create a web portal for informers to anonymously report any abuses (www.stopcorruption.ma). Several other mechanisms are in place to enforce transparency and integrity, including:

- The use of information technology and the internet in administration (e-government).
- A public procurement system that establishes transparency in the transactions with measures to reduce fraud and corruption.
- The General Inspectorate of Finance that oversees and audits the financial activities of public institutions.
- The Higher Audit Court which assesses local, regional and national accounts and publishes annual reports about them.
- The Office of the Ombudsman which addresses rule of law complaints by the citizenry.

The main purpose of the Central Authority is to coordinate the work of other government agencies involved in the anti-corruption efforts, and it has no legal competencies of its own. Its budget was very small. It focuses on raising the issue of corruption in public awareness campaigns, and in terms of policy it has focused on the issues of bribery, corruption in public procurement and on money laundering. It did manage to criminalize corruption, but the overall Moroccan effort against corruption remains below that of peer states in the Council of Europe area (Ukraine, Moldova and Azerbaijan) but well ahead of other Middle Eastern and North African states, with the exception of Jordan. In other words, corruption is a reality in Morocco; nevertheless, its corruption levels remain below those that would have been predicted by its income level (Bryane et al., 2003). The core of the government’s anti-corruption plans rests on three main thrusts:

- Consolidating transparent government and a sense of responsibility,
- Improving transparency by giving the public access to the decision-making process through encounters between officials and stakeholders,
- Reinforcing cadres and preventing corruption.

While corruption is acknowledged as a problem, the country has not been able to address it effectively. The wealth taken up by corruption is sufficient for funding the entire Moroccan military. As the United States Agency for International Development puts it:

“Corruption is not limited to the judiciary; it is also a significant factor constraining economic investment and growth, thereby limiting access to fair and equal opportunities and justice for ordinary Moroccans. The 2008 USAID/Morocco Corruption Assessment provides further information and insight in the areas of education, public procurement, local governance, and youth. In 2009, Morocco had a score of 3.3/10 in Transparency International’s Corruption Perceptions Index (CPI). This index represents the perceptions of business leaders and other experts on the integrity of the public sector. The index number for Morocco has ranged from 3.7 in 2002 to 3.2 in 2004, 2005, and 2006” (USAID, 2010)

There is a widespread campaign against corruption in the press and through posters. During the lead author's visit to the Sebou Basin Hydraulic Agency (ABHS), there were posters at the main gate and in every corridor about corruption prevention. The two photos in figure 1 were taken in the agency:



Figure 1: Beware of bribery
Photos by Dr. Ahmed Legrouri

Water Integrity Issues

At present, the main foci of the executive departments related to water issues are improving production and to implement reforms whose necessity became apparent after the implementation of the Maroc Vert plan – a government policy launched in April 2008 after consulting with McKinsey Associates. The plan envisions the modernization of agriculture by encouraging both agribusiness and supporting small farmers, including subsistence ones. The issue of integrity is related directly to the Central Authority for the Prevention of Corruption. The water sector has not seen direct scrutiny for corruption at the medium and lower levels, and as a result, while the problems are understood to a large degree, there has not been a formal water integrity process outside the ONEE, which has worked on water integrity as a result of its collaboration with GIZ.

In terms of the water sector, the main issue is accreted laws that are contradictory and create conflicting rights in practice. For example, tribal water rights are still largely respected despite being in contradiction to the formal abolition of tribal structures in the now superseded 1962 constitution. It is impossible to stop individual Moroccans from asserting their tribal identities and chartered rights, so actual practice and the law diverged. A second important issue is the prevalence of illegal wells, which are dug by farmers who do not know of the regulations. For example, the regulations require all wells to have a license from the River Basin Authorities formed by the 1995 Water law. In a 2011-2012 survey, an Al Akhawayn University research team using social survey methods found that the vast majority of farmers in the Upper Sebou basin do not know of the laws governing wells and did not recognize the RBA by either name or function. A third problem with water is that the River Basin Authorities do not have the personnel or enforcement capabilities to carry out their mandates (Legrouri et al, 2013). These problems have affected the national potable water company to a far lesser extent. The National Office for Water and Electricity (ONEE) has been able to use online systems to make its operations transparent and to enhance the public's ability to communicate with the agency. Accessing ONEE in terms of installing a water line requires a priori measure of capital, so in some ways, ONEE's constituency can afford to have better access. The challenge facing other water stakeholders in Morocco is insuring that some of the lessons learned from ONEE can be used where applicable.

There are differences between water for farming and water for household use, so these lessons will be non-comprehensive. In general, the integrity of the water sector in Morocco is threatened less by wilful corruption, which is present, than by structural problems in terms of transparency, reachability, communication, and capacity. The agencies with the legal mandate to license water use and to coordinate with stakeholders like agriculture and the cities simply lack the personnel and the plenary presence, or capacity for short, to carry out their mission. The root cause is probably the law itself. The RBAs were given vast responsibilities under the 1995 water law and were not funded and structured to address their new responsibilities. The enforcement function dovetails with the role of the Ministry of Interior and would need to be resolved. For that reason, we tried to include political representatives in our workshops. So obscure is the River Basin Agency that its name is sometimes unknown by water users like farmers. Consequently, wells are dug, and water abstracted extra-legally by people who are mostly unaware that they are carrying out something illegal.

Water Governance in Morocco

Politics and Overarching Structures

Politics, law-making and policy in Morocco take place under the framework of a constitutional, parliamentary monarchy. Unlike his counterparts in Europe, the Moroccan King retains executive powers, which he shares with a cabinet headed by a leader, called the Government President, selected by the majority party or coalition in the parliament's lower chamber. The House of Representatives in turn is elected on the basis two systems: multimember districts and proportional party lists. The parliament's upper chamber, the Councillors, is selected on the basis of elections by electoral colleges representing social, economic and municipal interests. Morocco is a transitional country with reforms generally moving towards democratization over the last twenty years. As is clearly indicated by the King's March 8th, 2011 speech, the country has to continue the reform processes for the foreseeable future. Integrity is an acknowledged issue and the establishment of a body to address it represents an acceptance of the need to reduce corruption.

There are around 30 major operators in the areas of water production and distribution for drinking purposes and irrigation. In addition, thousands of user associations operate in rural areas and some communes manage the distribution of water in their localities. Drinking water distribution is allocated to the communes, under the municipal charter of 2002. They manage these services either directly or through an independent administration, ONEE, or by concession to a private operator. ONEE is the leading producer of drinking water, with about 80% of drinking water distributed in cities and rural areas. Three main actors are involved in the planning, development and management of water resources for irrigation, which uses around 85% of water resources in the country. Apart from the executive administration that acts as a promoter and regulator of irrigation schemes, nine regional offices of agricultural development (ORMVA) are involved, as public autonomous institutions, in the management of irrigation waters originating from large hydraulic systems. These offices are not distributed around the country in the same way as the RBAs are. In addition, thousands of water user associations (WUAs) help manage irrigation schemes throughout the country. The WUAs are civil society organizations ran for the benefit of their members through member-elected boards. They are responsible to their members and often reflect pre-existing communal and local populations such as clans, tribes and villages. Since 2005, some public-private partnerships in form of BTO (Build, Transfer, Operate) schemes have been established for irrigation water distribution. Operators in industry are serviced in three ways: directly through the ONEE for large customers, by distribution from ONEE dealers or agencies, or by regulated individual water extraction. As stated earlier, the primary integrity issue facing the water sector is the extensive digging of illegal wells, because the regulations are not enforced at the field level due to lack of capacity at the level of RBAs.

Laws, Institutions and Stakeholders

The Moroccan water sector is very complex both in terms of the physical environment and the use patterns. This complexity is reflected in the water governance structures and stakeholders. At the historic village level before colonialism, the unique and indigenous political decision-making structures of the country themselves reflect the dilemmas that water posed for farming communities (Geertz, 1972). The first law codes governing water resources in Morocco appeared during the colonial period. Before that, customary and Islamic law governed water right reserving bodies of water to the state. Currently, Morocco governs its water resources using the 1995 Water Law. The law sets up the national water regime and defines the relationship between the various state structures. At the core of the regime are the nine basin agencies that are charged with the management of water resources for each of the country's nine hydrological basins. But the stakeholders include many ministries, areas, private interests and non-governmental associations. As explained earlier, the 1995 Water law has not taken full root, particularly with regard to the mission, mandate and capacities of the River Basin Agencies. As stated earlier, passing the 1995 law was an achievement, but the RBAs were not equipped to carry out their role under it. This causes structural corruption and it cannot be addressed without the involvement of parliament at some stage in the project.

The importance of water in Morocco was again clearly and explicitly declared in the logic of "water and sanitation as rights for all" in the Royal speech, delivered at the ninth session of the High Council for Water and Climate in 2001. This logic was incorporated into the strategic vision of sustainable development and promoted by various national governing documents and international agreements ratified by Morocco. Some of these are:

- Article 31 of the current Moroccan constitution confirms the right of all citizens to access safe water, healthy environment and sustainable development.
- The 2011 Report of the Economic, Social and Environmental Council (CESE) entitled "A New Social Charter."
- National Charter for Environment and Sustainable Development.
- Insuring environmental sustainability under Millennium Development Goal 7.
- The government's 2012 political program, which aims to ensure water demand management; rationalized use; conservation of available resources; and the continued mobilization of resources, diversifying their origins and mobilizing unconventional water resources.
- International treaties and conventions ratified by Morocco: The United Nations General Assembly resolution of 2010, which recognized the right to safe and clean drinking water, and the Protocols of the United Nations Conference on Environment and Development held in Rio de Janeiro (Brazil) in 1992.

The Water stakeholders in Morocco can be defined at three distinct levels: advisory, executive, and public institutions and users (figure 2). These can be subdivided into three main groups: consultative and coordination, ministry departments, and public institutions plus water users.

EXPERIMENTAL RESULTS

This experiment investigates the performance of COBSKF in comparison with other optimization algorithms such as particle swarm optimization (PSO), grey wolf optimizer (GWO), genetic algorithm (GA), gravitational search algorithm (GSA) and black hole (BH). The experimental parameters used in this experiment are shown in Table 7. For COBSKF, the Jr value used is 0.9. For GSA, α is set to 20 and initial gravitational constant, G_0 is set to 100. For PSO, cognitive coefficient, c_1 , and social coefficient, c_2 , are set to 2. The inertia factor is linearly decreased from 0.9 to 0.4. For GWO, components of a are linearly decreased from 2 to 0. Lastly, for GA, the probabilities of selection and mutation are set to 0.5 and 0.2, respectively.

<p>Main Advisory Bodies</p> <ul style="list-style-type: none"> • Higher Council for Water and Climate (CSEC) responsible for coordination and consultation. • National Council for the Environment. • Council for Agricultural Development. • Permanent Inter-Ministerial Council for Rural Development (CIE). • National Drought Observatory.
<p>Executive Administration Authorities</p> <ul style="list-style-type: none"> • Ministry of Territorial Administration, Water and the Environment, merged with the Ministry of Energy and Mines to form the Ministry of Energy, Mines, Water and the Environment, in charge of regulation. <ul style="list-style-type: none"> ○ Delegated Ministry of Water, also in charge of regulation. ○ Secretariat of the Superior Council for Water and Climate. ○ National Directorate of Hydraulics. ○ National Meteorological Office. • Ministry of Agriculture and Rural Development. <ul style="list-style-type: none"> ○ Water and Agriculture – Engineering Administration. • High Commissariat of Water, Forest and Anti-Desertification. • Ministry of Interior. <ul style="list-style-type: none"> ○ Directorate General for Local Collectives. ○ Directorate General for Regions and Conceded Services. • Ministry of Finance. • Ministry of Health. • Ministry of Energy and Mines. • Ministry of General Affairs – Prices Directorate.
<p>Public Institutions, Agencies and Private Operators</p> <ul style="list-style-type: none"> • River Basin Agencies. • Directorate General of Hydraulics. • National Potable Water Office and National Electricity Office (now integrated into ONEE). • Regional Office for Agricultural Development (ORMVA-MARD). • Companies and Private Operators. • Water Users Associations. • Provincial Water Commissions. • Representatives of local collectives

Figure 2: Main Moroccan Water Stakeholders (Ouassou et al., 2005 and MDCE, 2013)

Translated from French by the authors

The responsibilities of the various stakeholders are listed in table 1. These various levels correspond to the layering of the Moroccan state in terms of the dual executive and the local and regional governing bodies – governors and prefects are appointed by the monarch and work with elected mayors and councils. In general, coordination and communication tend to be reserved to the highest levels, a reservation which poses a problem at the local implementation level. The status quo on water does not resolve the exact nature of the relationship between these actors. The overall coordination responsibility lies with the Directorate General of Hydrology (DGH), which is part of the Delegated Ministry of Water within the Ministry of Mines, Energy, Water and Environment.

The new constitution, the regionalization program, the ongoing update of the 10-95 water law, and the implementation of the new Communal Charter constitute opportunities for the improvement and adaptation of the existing institutional framework of the water sector. It is through these opportunities that the issue of corruption and integrity can be addressed, because otherwise the targeted bureaucracies' personnel will feel that there are being accused of corruption at the individual level. The Interior Ministry and the Ministry of Agriculture often are not connected to the Ministry of Water's regional bodies directly, which leads to a lack of communication. The central institution in this complicated framework

is the River Basin Agency, of which there are nine covering the whole of the country. The nine RBAs have the mission to “implement a decentralized water policy in line with national guidelines; encourage the participation of all regional and local players and specifically, water users in the implementation of this policy; and finally implement this policy in a framework of partnership and participation, in line with guidelines expressed in local development plans” (Saleth and Dinar, 2000).

Table 1: Attributions of different ministry departments (Chaouni, 2005; Translated from French by the authors)

Department in charge of	1	2	3	4	5	6	7	8	9	10	11
Water	X	X	X	X	X	X	X	X	X	X	X
Interior	X		X			X			X	X	X
Agriculture	X		X	X	X			X	X	X	X
Energy and Mines	X	X	X				X	X	X	X	
Environment	X		X						X	X	X
Health	X					X			X	X	X
Water and Forest	X								X	X	X
Finance	X		X								
Trade and Industry	X					X			X	X	
Justice											X
Equipment	X									X	
Planning	X										
Housing	X								X	X	
Tourism	X								X	X	
Land Management	X									X	
Education	X									X	
Cultural Affairs										X	
National Defence											X
Islamic Affairs										X	

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|--------------------------------|----------------------------------|----------------------|
| 1. Planning | 5. Irrigation | 9. Protection of DPH |
| 2. Survey on water resources | 6. Drinking and industrial water | 10. Public awareness |
| 3. Investment | 7. Hydroelectricity | 11. Water police |
| 4. Water resource mobilization | 8. Maintenance of public works | |

CONCLUSION

Despite the success of the institutional framework, there are still many areas that need improvement. Some of these were identified by the CESE, as part of its work on green economics, and published in its report on the governance of water resources in Morocco (CESE, 2014) as:

- The Absence of a clear single regulatory body for the water sector, the CIE has been dormant.
- The need to specify the role of the CSEC concerning the water sector.
- Multiplicity of stakeholders and operators and sometimes overlap of their functions.
- Insufficient coordination between the departments concerned by water;
- Lack of autonomy of the RBAs vis-à-vis the executive level water ministry.

Based on this diagnosis, the CESE urged reforms in water management based on valuation and conservation. The Council proposed the following ten recommendations in order to improve the management of water resources as an important lever for socio-economic development of the country:

1. Broaden the national consultation about integrated water management by strengthening the role of CSEC as a national forum for consultation, guidance and evaluation of national policy in the sectors of water and sanitation.
2. More integrated management at the regional and local levels by a widespread representation of the nine RBAs and generalization of contracts for groundwater in order to regulate access to water through a participatory approach.
3. Review the legislative framework by a revision of the 10-95 water law and its implementing regulations as well as its compliance with the provisions of the new constitution.
4. Diversify resource mobilization by establishing a long-term investment plan for the development of nonconventional water resources and establishing a routine post-evaluation of water development projects.
5. Improved demand management through generalized demand management programs as well as economics and valuation of water resources.
6. Increased vigilance to protect the resources by strengthening the oversight bodies, generalizing the water efficiency programs, and establishing attractive financing that could spur private investment in clean-up projects.
7. Promoting of public/private partnerships through incentives for private operators specialized in the areas of water mobilization, sanitation, wastewater treatment, water desalination, and hydropower production.

8. Awareness campaigns and R&D programs: develop education, training and awareness programs about the challenges of the water sector, use new technologies in order to make of the sector a real national industry and a vehicle for green economy development, and implement the R&D and innovation cluster.
9. Equitable and economically viable management: tariff reform, revision of charges on public water use, review of pollution charges, and improved recovery rates.
10. Improved risk management by strengthening the capacity of stakeholders in the area and using new decision-making tools (Know, Act, Prevent).

To a great extent, the RBAs have been tasked with a mission that they are not equipped to accomplish. They need to coordinate with local branches of the Ministry of Agriculture and the Ministry of Interior as well as Water Users' Associations, but at present, they are not present on the field and often lack the capacity to interact with other agencies as well as end users. The weakness in the ability to implement the participatory and partnership aspects of their mandates has more to do with their origins as a hydrological service staffed by water oriented civil engineers and less to do than any deliberate lack of will. While the law empowers the RBAs to control the water supply and to regulate use, it does not create the resources they need to address their complete mandate.

The central relationship between the RBAs and other stakeholders is their relationship with the Ministry of Agriculture's in-basin operations. As the representative of the farming community which uses more water than any other user in the country, the RBAs need to develop ways and means for effective communication and coordination with Agriculture. As it currently stands, this is absent. Another important relationship is the link between RBAs and urban water users as represented by ONEE and the private concession operators who serve various cities. Between the urban and agricultural use, nearly the whole consumptive use of water is accounted for. The training and capacity building workshops we intend to hold during 2015 are aimed to empower the RBAs and allow them to engage in dialogues with other stakeholders as well as with other layers of consultations and decision-making about the twin issues of integrity and corruption. To that extent, we aim to bring coordination and communication into layers that have not hitherto been involved with these two activities. Figure 2 displays the complexity of the current system, and at present, there is little communication and coordination beyond the national layers, and this means that at the local level, the right hand of the state does not know what the left is doing with regard to water. Decentralization has taken place, but not in terms of coordination.

Morocco's strengths remain in being able to respond to emergencies, particularly floods and droughts. There are institutions that target both, including a National Drought Observatory, and the RBAs themselves, which often can respond to floods quite effectively. The country is also attempting to move from water development to water allocation and pricing regimes in order to encourage water conservation (Choukr-Allah 2011). The country also added several general principles to its water policy, including the idea that polluters should pay, and that water policy should, in principle, be decentralized. The weaknesses are not in the principles, or the engineering and infrastructure aspects. The weaknesses lie in the ability to coordinate and to communicate across agencies and stakeholders for better and for worse. As a result of extensive research on the field using both qualitative and quantitative methods between 2009 and 2012 and presented at various conferences and published in two articles thus far, a team of researchers at Al Akhawayn University has been able to identify several challenges facing the water sector. At the high decision-making and political leadership levels, there is clear understanding that the sector faces several problems concerning integrity, and these include, in the order of importance:

- Extensive illegal well digging, much of it by farmers who are unaware of the laws governing wells.
- Unsettled and disputed tribal claims on water sources which often pit the state against traditional users. While there is an ongoing and well-organized national conversation about land title, including tribal and communal land, the same conversation has not taken place yet about water rights. There has been friction between tribal and communal stakeholders about water, particularly concerning projects that involve bottled water or agribusiness users.
- The presence of paperwork middlemen between the farmers and the government with regard to subsidies and assistance with technological purchases.
- The lack of coordination between various stakeholders with regard to water. Basin agencies do not coordinate with the Department of Agriculture, which represents the leading users.
- The lack of coordination between the basin agencies and the farmers at the field level or with the Water Users Associations.
- A structural problem in terms of language, bureaucrats tasked with water management often use French while their constituency is more often than not Arabic and Tamazight speaking. This leads to problems with communication, participation, and with transparency as well.
- The absence of a field presence for the RBAs that are legally bound to govern, and control water use in their respective basins.
- The absence of formal channels of communication between water companies supplying cities and farmers' water users' associations (WUAs).

The good news is that the overwhelming majority of integrity issues relate to structure rather than ethical shortcomings at least in the water sector. While the problem with bribery and unearned rents is endemic and persistent in the Moroccan economy, the larger problems with integrity in the Moroccan water sector lie in the mismatch between mission and resources allocated to the RBAs and the lack of systematized communication between the various stakeholders at the local level. Fortunately, these structural problems can be transcended. In order to create these opportunities to talk at

various levels, Al Akhawayn University, in partnership with SIWI, held workshops that have enabled activists, cadres, decision makers, municipal authorities and women's activists to meet and exchange opinions and perspectives.

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