

**Project Evaluation Series
08/2020**

**Mid-term evaluation of the project
“Monitoring water productivity by
remote sensing as a tool to assess
possibilities to reduce water productivity
gaps”**

Project code: GCP/INT/229/NET

Annex 2. Survey results

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Survey Results

WaPOR- and Water Accounting Training

1. Highlights and findings

- i. Largest group of respondees were academics (44 percent). Operational land and water managers staff (30 percent) came second. Expert/ consultants (private sector) came third (29 percent). In the trainings in Ethiopia a large number of university staff participated but in Kenya government staff prevailed.
- ii. The very large majority found the training useful (96 percent). Among the few that not find it useful there were two operational land and water managers.
- iii. The most common outcome of the training was 'better understanding on water productivity and water accounting (74 percent). 50 percent of the respondees mentioned that the training encouraged them to access the WaPOR database.
- iv. 16 percent of the trainees did access the database more than 10 times, but 19 percent never did. Particularly experts and consultants access the database frequently. The frequent WaPOR users did so for research (9) or operational improvement (3). The high frequency users either thought WaPOR had no shortcoming or pin pointed at the confidence levels.
- v. The most common use of the training was for study and research (46 percent). 37 percent however did not use WaPOR following the training.
- vi. The open and free access is seen as the major plus (90 percent), but also the large database and the ability to get an overview of the water systems is mentioned frequently (56 percent resp 50 percent).
- vii. The low resolution (41 percent), the difficulty to classify land and water uses (33 percent) and "requires special skills to use" (24 percent) are mentioned as main weak points.
- viii. The main opportunities for using WaPOR are seen in improved irrigation management (79 percent), improved water allocation (61 percent) and the reporting on national water performance indicators (60 percent). Of the operational land water managers that responded 30 percent used of WaPOR in operational improvement as did 25 percent of experts/ consultants.
- ix. Research organizations and water system managers are seen as the prime uses, respectively at 76 percent and 74 percent.
- x. The main limitation in using is seen in the need for additional data collection.
- xi. The most frequent recommendations for the future are: improved resolution; validation; more training and tutorials and larger user-friendliness.
- xii. A profile of the main movers can be constructed. The position of most movers is academic, operational water or land manager or private sector. For all of them the training was useful. This training was a good introduction for water productivity and water accounting using remote sensing and for most people it was related for the current work. The main outcome of the training was better understanding in water productivity, encouragement to use WaPOR, how to analyze water productivity and how to improve water management. WaPOR will be most used for study and research and the strongest points of WaPOR are open and free access, large database and

ability to do new analysis. WaPOR can be improved by higher resolution and better classification water and land users. The main opportunity of WaPOR is to improve irrigation management while governments, research organizations and water system managers are the main users.

2. Methodology

1. The E-survey of the WaPOR- and Water Accounting Training was answered by 82 people over Africa and Middle East, who had attended a training event on WaPOR and/or Water Accounting, organized by IHE-Delft. The survey was conducted to collect opinions of the training participant on the WaPOR database and the training they followed.
2. The survey has 15 questions. The questions were either multiple-choice or an open question. In some multiple-choice questions multiple answers could be given. Others were yes/no questions.

Table 1: Survey questions

Q	Question	Answer options	Possibility choice of multiply answers (Yes/No)
1	In which country are you based?	<ul style="list-style-type: none"> <input type="radio"/> Benin <input type="radio"/> Ethiopia <input type="radio"/> Ghana <input type="radio"/> Jordan <input type="radio"/> Kenya <input type="radio"/> Lebanon <input type="radio"/> Mali <input type="radio"/> Mozambique <input type="radio"/> Rwanda <input type="radio"/> West Bank <input type="radio"/> Other... 	No
2	For what are you working for?	<ul style="list-style-type: none"> <input type="radio"/> University <input type="radio"/> National Government <input type="radio"/> Local or Regional Government <input type="radio"/> Farm Enterprise <input type="radio"/> Private Sector <input type="radio"/> Civil Society <input type="radio"/> Other... 	Yes
3	How would you describe your position?	<ul style="list-style-type: none"> <input type="radio"/> Policy maker <input type="radio"/> Academic <input type="radio"/> Expert/Consultant <input type="radio"/> Operational Land or Water Manager <input type="radio"/> Farmer <input type="radio"/> Other... 	Yes
4	Was the training in Water Accounting or WaPOR useful?	<ul style="list-style-type: none"> <input type="radio"/> Yes <input type="radio"/> No 	No
5	Why was the training useful or not useful for you?	[Open]	No
6	What was the main outcome of the training in Water Accounting or WaPOR?	<ul style="list-style-type: none"> <input type="radio"/> Better understanding on Water Accounting and Water Productivity <input type="radio"/> Encouragement to use the WaPOR database <input type="radio"/> Taught me how to analyze Water Productivity <input type="radio"/> Taught me how to make improvement in water management 	Yes

Q	Question	Answer options	Possibility choice of multiply answers (Yes/No)
		<ul style="list-style-type: none"> ○ Other... 	
7	Have you accessed the WaPOR database following the training?	<ul style="list-style-type: none"> ○ No ○ Yes (1-3 times) ○ Yes (4-10 times) ○ Yes (more than 10 times) 	No
8	Did you use WaPOR or Water Accounting following the training?	<ul style="list-style-type: none"> ○ No, there was no direct opportunity in my work ○ No, it was difficult to use ○ No, I found it a less useful method ○ Yes, for study and research ○ Yes, for operational improvement ○ Other... 	Yes
9	What do you see as the strongest point of WaPOR?	<ul style="list-style-type: none"> ○ Open and free access ○ Neutral and impartial ○ Large database (10-year data) ○ Ability to get an overview of the water systems quickly ○ Ability to do totally new analysis ○ There is no strong point ○ Other... 	Yes
10	What do you see as weakest point of WaPOR?	<ul style="list-style-type: none"> ○ Not reliable enough ○ Resolution is too low ○ Difficult to access ○ Difficult to classify different land and water users ○ Requires special skill to use ○ There is no weak point ○ Other... 	Yes
11	Where do you see main opportunities of WaPOR?	<ul style="list-style-type: none"> ○ To report national and water performance indicators ○ To identify best and worst performers in water productivity ○ To improve water allocation ○ To improve irrigation management ○ To improve rainfed agriculture ○ To manage groundwater ○ To create water charging systems ○ There is no main opportunity ○ Other... 	Yes
12	Who do you see as prime users?	<ul style="list-style-type: none"> ○ Governments ○ Research Organizations ○ Farmers ○ Water System Managers ○ Development Organizations ○ Private Sector ○ Investors ○ Consultants ○ Other... 	Yes
13	What do you see as main limitation of using WaPOR?	<ul style="list-style-type: none"> ○ Not trusted yet ○ Reluctance to use global openly available information ○ Needs additional data collection 	Yes

Q	Question	Answer options	Possibility choice of multiply answers (Yes/No)
		<ul style="list-style-type: none"> ○ Not user friendly enough ○ No examples on how to apply ○ No one is there to use the information ○ Lack of interest in water management ○ There is no main limitation ○ Other... 	
14	Where do you see the largest potential application of WaPOR?	[Open]	No
15	What recommendations would you give in further developing WaPOR?	[Open]	No

2.1 Cross tables

3. The cross tables have been prepared to show links between questions by multiplying the answers of two questions. Thirteen cross tables were prepared:

CT	Question (y-as)	Multiplied by question (x-as)
1	In which country are you based?	For what are you working for?
2		How would you describe your position?
3	How would you describe your position?	Was the training in Water Accounting or WaPOR useful?
4		What was the main outcome of the training in Water Accounting or WaPOR?
5		Have you accessed the WaPOR database following the training?
6		Did you use WaPOR or Water Accounting following the training?
7		What do you see as the strongest point of WaPOR?
8		What do you see as weakest point of WaPOR?
9		Where do you see main opportunities of WaPOR?
10		Who do you see as prime users?
11		What do you see as main limitation of using WaPOR?
12	Have you accessed the WaPOR database following the training?	Did you use WaPOR or Water Accounting following the training?
13		What do you see as main limitation of using WaPOR?

2.2 Movers and non-movers

4. **Movers** will be classified as the persons who are positive about WaPOR and are encouraged to use WaPOR in the future, who are motivated to apply it for operational purposes and who accessed the database frequently. **Non-movers** are the persons who were less positive about WaPOR and have no interest to use WaPOR in the future. A graph will be shown for the percentage of movers and non-movers. A general profile of the movers and non-movers is also shown.

3. Results

5. The results of the survey are shown in graphs, cross tables and movers and non-movers.

3.1 Graphs

6. The graphs will show the percentage of the chosen answer of all the people. The survey is answered by 82 people. The sum of the percentages will not be 100 percent in most cases, because it was possible to choose multiple answers. The open questions are shown by most answered results instead of graphs.

Figure 1: In which country are you based? (Graph)

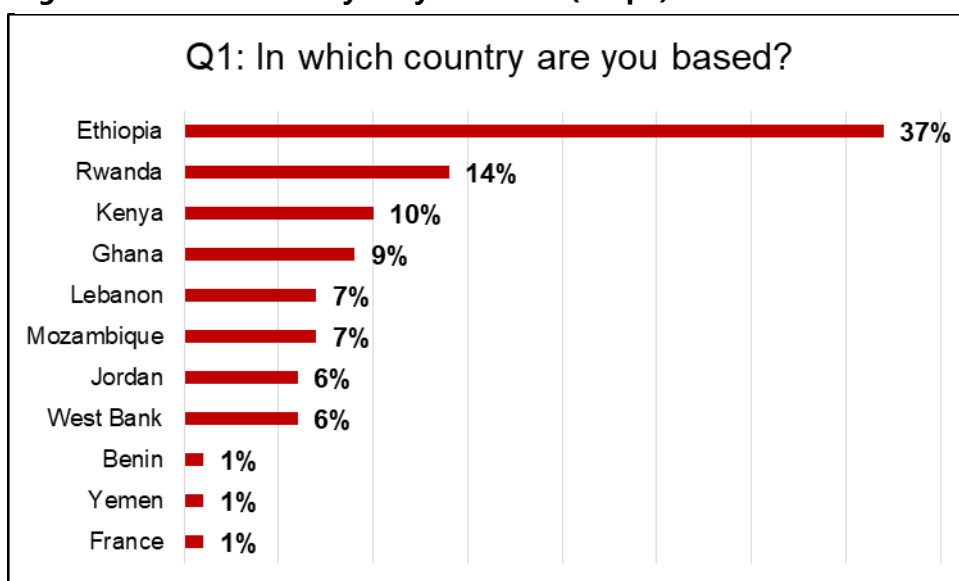


Figure 2: For what are you working for? (Graph)

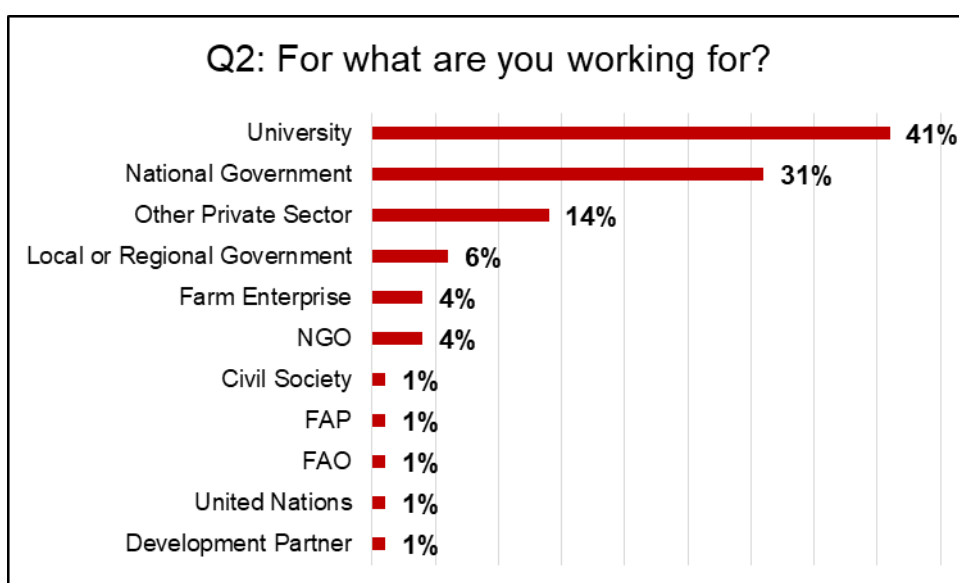


Figure 3: How would you describe your position? (Graph)

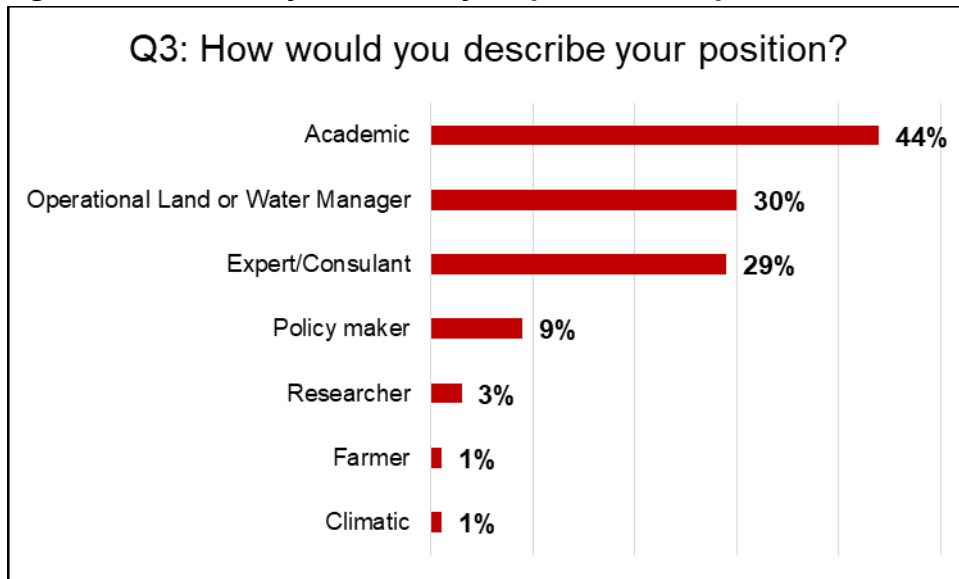


Figure 4: Was the training in Water Accounting or WaPOR useful for you?

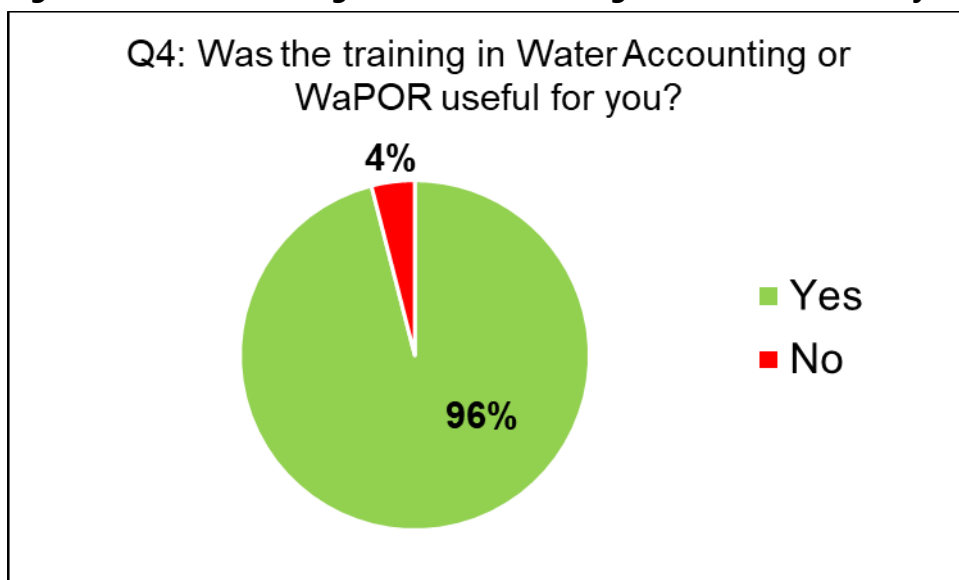


Figure 5: Why was the training useful or not useful for you? (Most

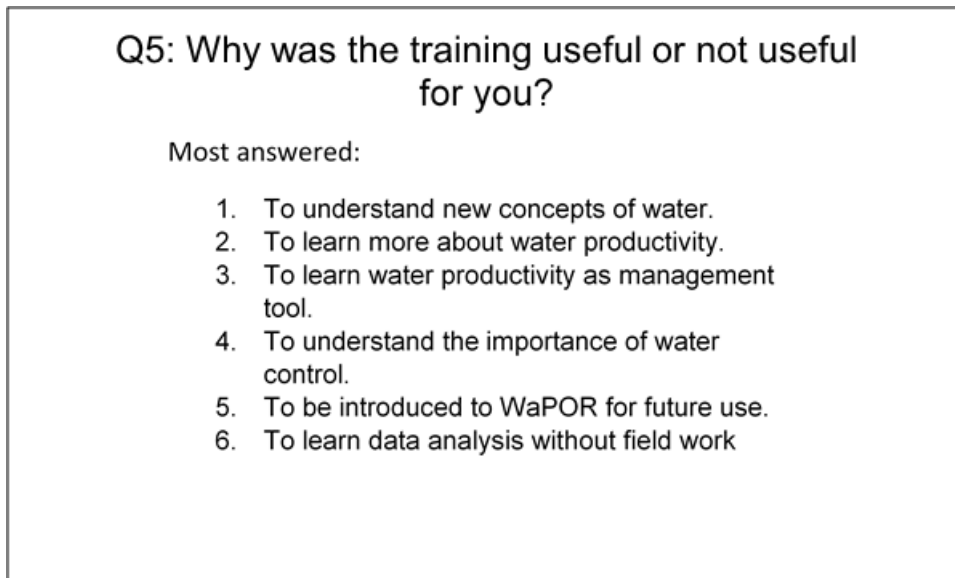


Figure 6: What was the main outcome of the training in Water Accounting or WaPOR? (Graph)

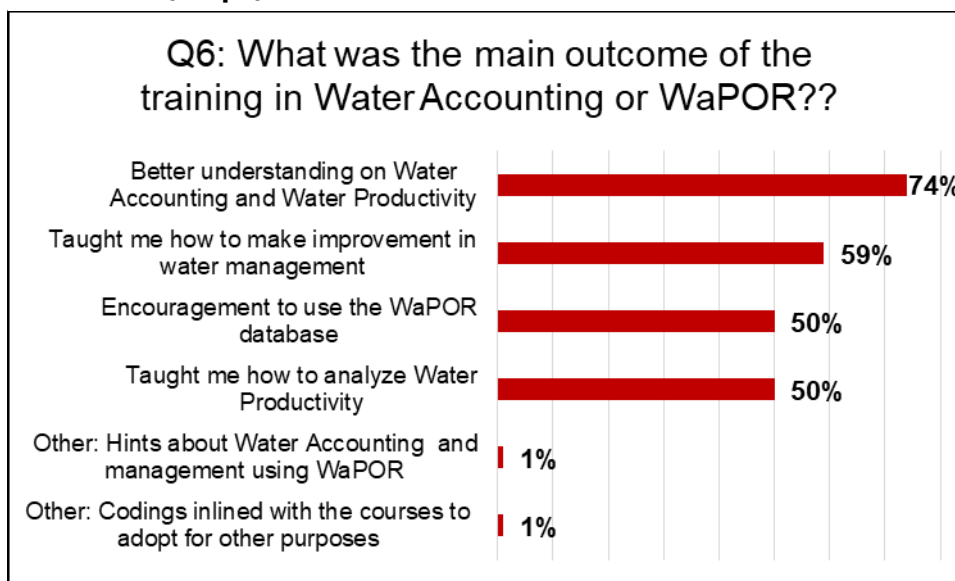


Figure 7: Have you accessed the WaPOR database following the training? (Graph)

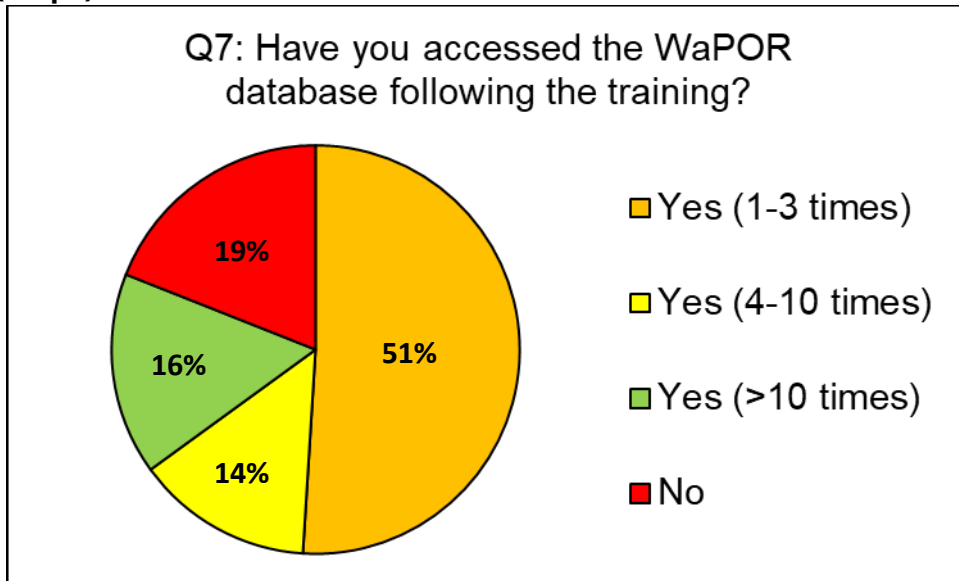


Figure 8: Did you use WaPOR of Water Accounting following the training? (Graph)

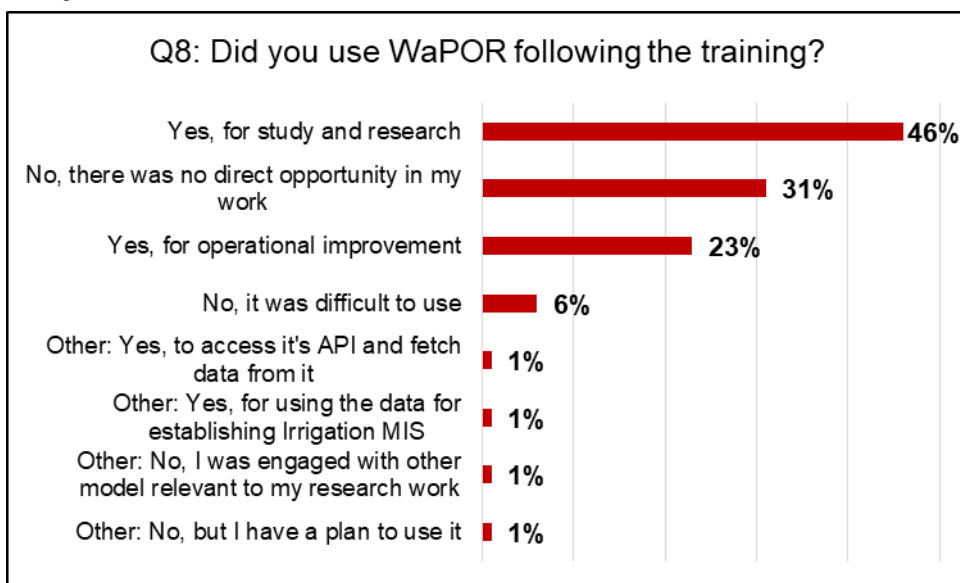


Figure 9: What do you see as the strongest points of WaPOR? (Graph)

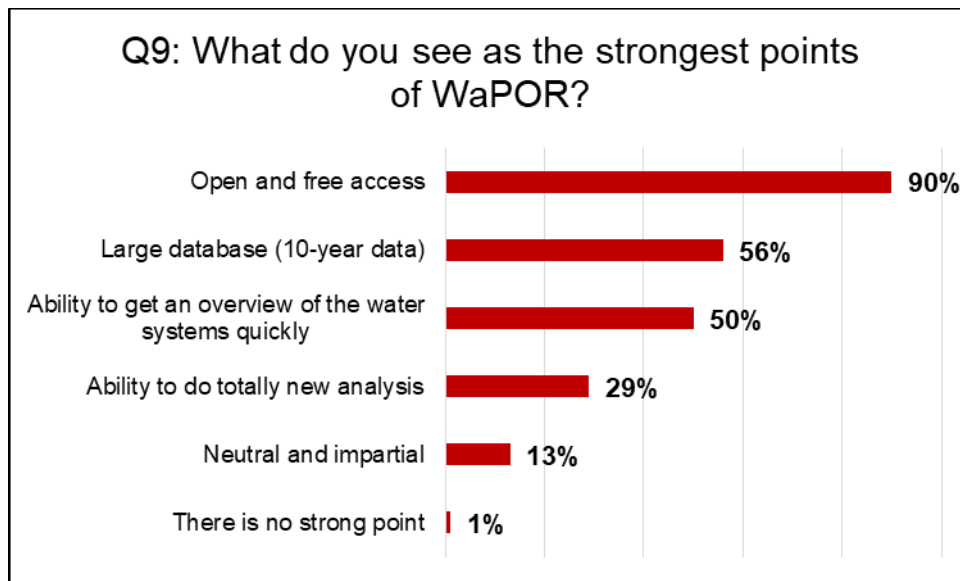


Figure 10: What do you see as the weakest points of WaPOR? (Graph)

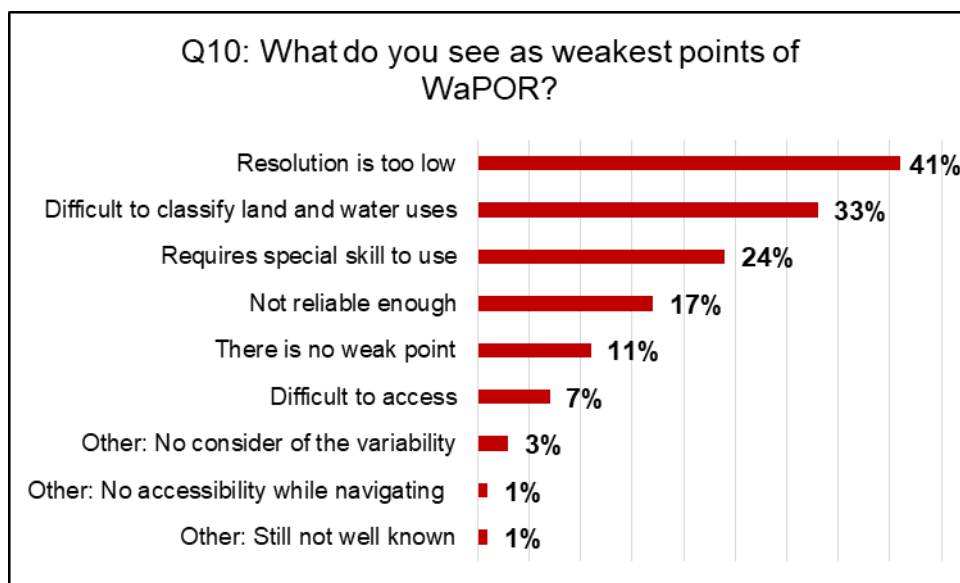


Figure 11: Where do you see main opportunities of using WaPOR? (Graph)

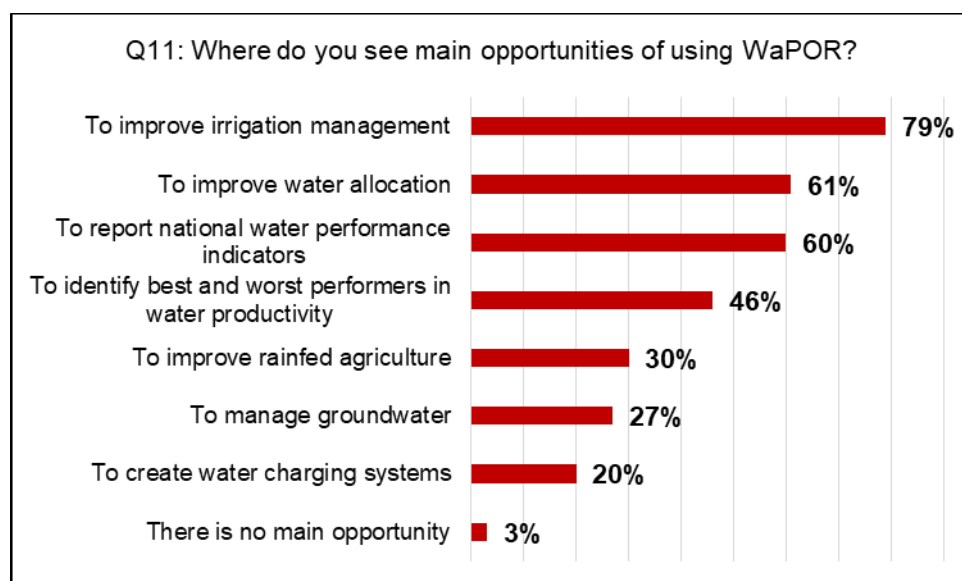


Figure 12: Who do you see as prime users of WaPOR? (Graph)

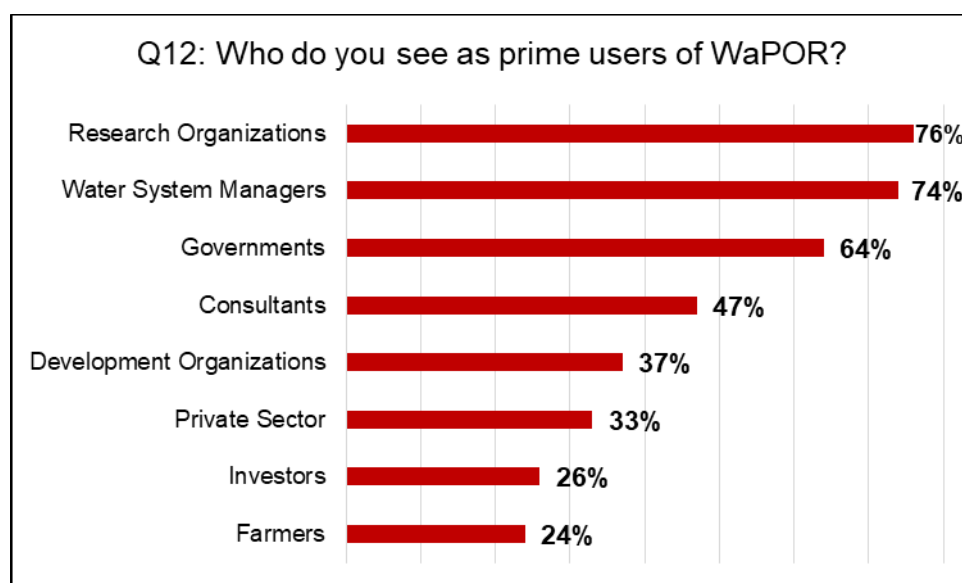


Figure 13: What do you see as main limitation of using WaPOR? (Graph)

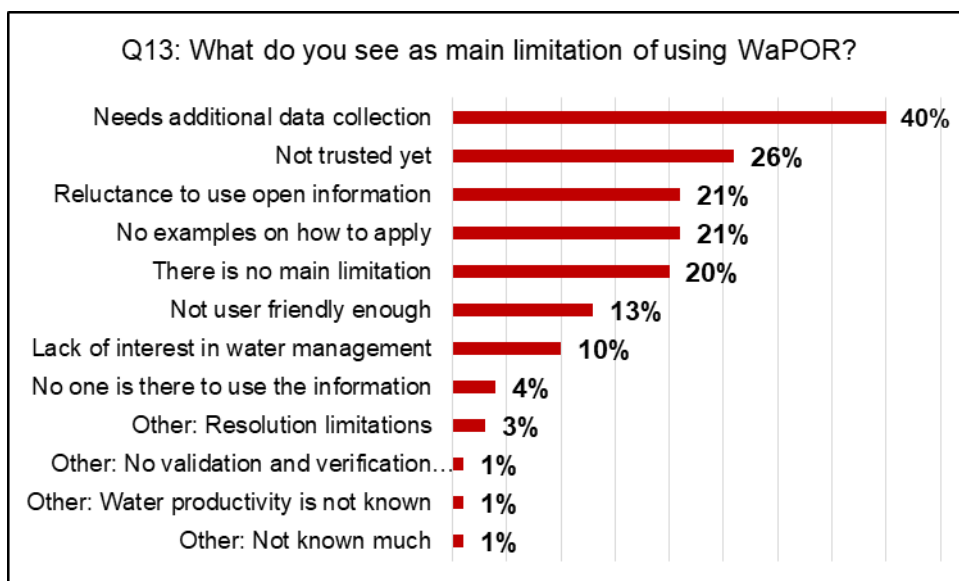


Figure 14: Where do you see the largest potential application of WaPOR? (Most answered)

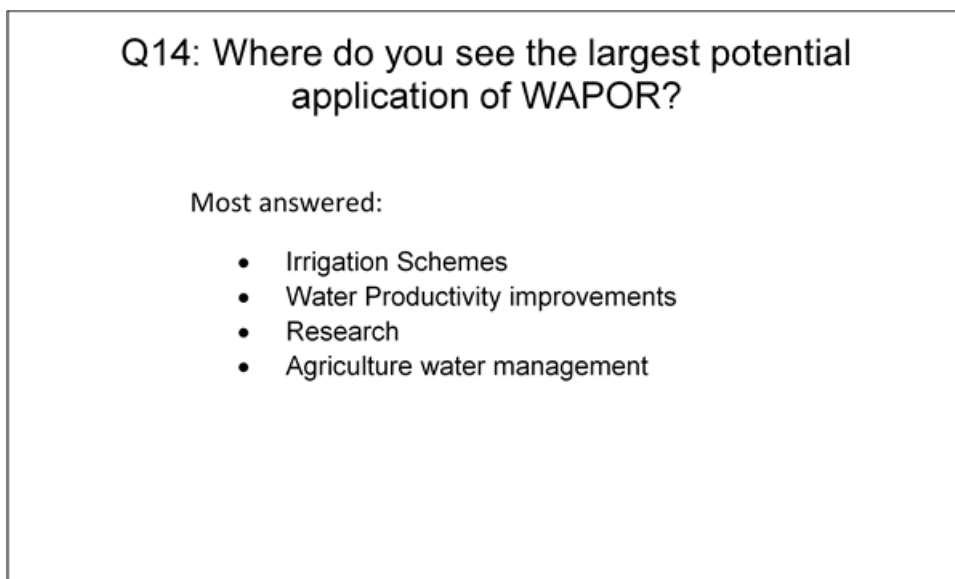
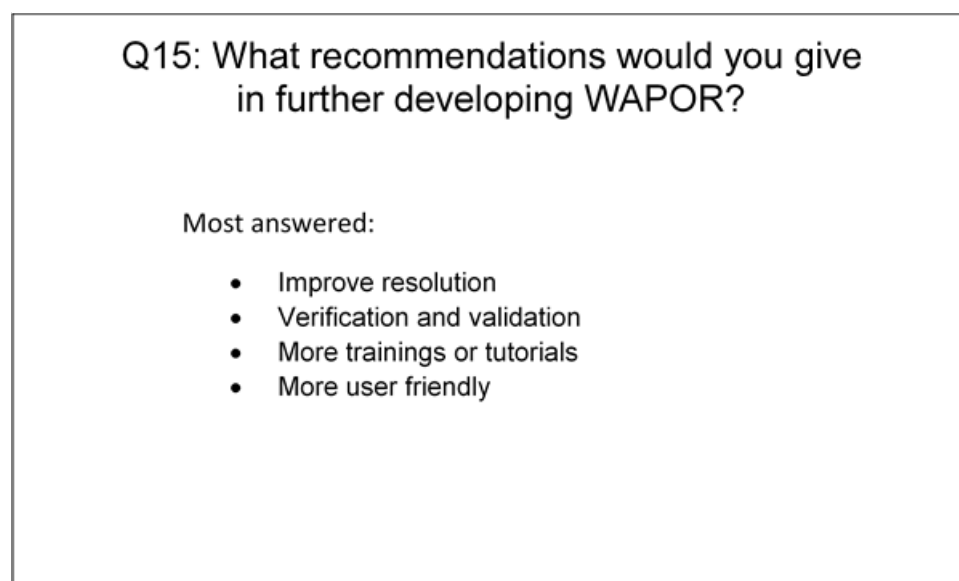


Figure 15: What recommendations would you give in further developing WaPOR? (Most answered)

3.2 Cross tables

7. There are 13 cross tables in total to show links between answers of the survey. The cross tables are created for nationality, profession and number of accessing WaPOR.

3.2.1 Nationality

<i>Organization</i> →	University	National Government	Other Private Sector	Local/Regional Government	Farm Enterprise	NGO	Others	TOTAL
Ethiopia	15	3	1	1	2	1	3	26
Rwanda	4	4	1	1	0	0	0	10
Kenya	2	1	4	1	0	1	1	7*
Others	8	14	4	1	1	1	1	27*
TOTAL	29	22	10	4	3	3	5	70*

Others (nationality) contain: Ghana, Mozambique, Lebanon, West Bank, Jordan, Benin, Yemen and France

Others (organization) contain: Civil Society, FAP, FAO, United Nations and Development Partner

**= including persons who chose multiply options*

<i>Profession</i> →	Academic	Operational Land or Water Manager	Expert / Consultant	Policy maker	Researcher	Climatic	Farmer	TOTAL
Ethiopia	15	4	5	1	2	0	0	26*
Rwanda	4	5	2	2	0	0	0	10*
Kenya	3	1	5	0	0	0	0	7*
Others	9	11	8	3	0	1	1	27*
TOTAL	31	21	20	6	2	1	1	70*

Others (nationality) contain: Ghana, Mozambique, Lebanon, West Bank, Jordan, Benin, Yemen and France

**= including persons who chose multiply options*

3.2.2 Profession

<i>Was the training useful? →</i>	Yes	No	TOTAL
Academic	30	1	31
Operational Land or Water Manager	19	2	21
Expert / Consultant	20	0	20
Policy maker	6	0	6
Researcher	2	0	2
Climatic	1	0	1
Farmer	1	0	1
TOTAL	79	3	82

<i>What is the main outcome of the training? →</i>	Better understanding on Water Accounting and Water Productivity	Taught me how to make improvement in water management	Encouragement to use the WaPOR database	Taught me how to analyze Water Productivity	TOTAL
Academic	24	21	21	18	31*
Operational Land or Water Manager	13	11	9	10	21*
Expert / Consultant	18	10	8	8	20*
Policy maker	2	3	3	2	6*
Researcher	1	1	1	2	2*
Climatic	1	1	0	1	1*
Farmer	1	0	0	1	1*
TOTAL	60	47	42	42	82*

*= including persons who chose multiply options

<i>How many times did you access WaPOR? →</i>	0 times	1-3 times	4-10 times	> 10 times	TOTAL
Academic	5	15	4	7	31
Operational Land or Water Manager	6	12	3	0	21
Expert / Consultant	4	8	2	6	20
Policy maker	1	5	0	0	6
Researcher	1	1	0	0	2
Climatic	0	0	1	0	1
Farmer	0	0	1	0	1
TOTAL	17	41	11	13	82

<i>Did you use WaPOR? →</i>	Yes, for study and research	No, there is no direct opportunity in my work	Yes, for operational improvement	No, it is too difficult to use	TOTAL
Academic	23	6	6	0	31*
Operational Land or Water Manager	3	11	6	3	21*
Expert / Consultant	9	8	5	0	20*
Policy maker	2	3	2	0	6*

Researcher	1	0	0	1	2
Climatic	1	0	0	0	1
Farmer	1	0	1	0	1*
TOTAL	40	28	20	4	82*

*= including persons who chose multiply options

<i>What is a strong point of WaPOR? →</i>	Open and free access	Large database	Ability to get an overview of the water systems quickly	Ability to do new analysis	Neutral and impartial	WaPOR has no strong point	TOTAL
Academic	29	19	15	10	3	1	31*
Operational Land or Water Manager	16	10	9	4	4	0	21*
Expert / Consultant	18	10	11	8	2	1	20*
Policy maker	6	3	2	1	0	0	6*
Researcher	2	1	2	0	0	0	2*
Climatic	1	1	0	0	0	0	1*
Farmer	1	0	0	1	0	0	1*
TOTAL	73	44	39	24	9	2	82*

*= including persons who chose multiply options

<i>What is a weak point of WaPOR? →</i>	Resolution is too low	Difficult to classify different land and water uses	Requires special skill to use	Not reliable enough	There is no weak point	Difficult to access	TOTAL
Academic	17	4	5	7	4	3	31*
Operational Land or Water Manager	6	10	8	2	2	2	21*
Expert / Consultant	7	6	5	4	1	1	20*
Policy maker	1	3	2	0	1	0	6*
Researcher	2	2	0	1	0	0	2*
Climatic	0	1	0	0	0	0	1
Farmer	0	0	0	1	0	0	1*
TOTAL	33	26	20	15	8	6	82*

*= including persons who chose multiply options

<i>What is the main opportunity? →</i>	Improve irrigation management	Improve water allocation	To report national water performance indicators	To identify best and worst performers	To improve rainfed agriculture	There is no main opportunity	Others	TOTAL
Academic	26	22	22	11	7	2	13	31*
Operational Land or Water Manager	14	13	12	11	4	0	7	21*
Expert / Consultant	14	7	8	10	8	2	5	20*

Policy maker	6	4	4	2	1	0	3	6*
Researcher	2	2	1	1	0	0	1	2*
Climatic	0	1	0	1	0	0	1	1*
Farmer	1	1	0	1	1	0	1	1*
TOTAL	63	50	47	37	21	4	31	82*

Others (opportunities) contain: To manage groundwater and to create water charging systems

**= including persons who chose multiply options*

<i>Who do you see as prime users? →</i>	Research Organizations	Water System Managers	Governments	Consultants	Development Organizations	Private Sector	Investors	Farmers	TOTAL
Academic	25	26	17	17	9	11	6	7	31*
Operational Land or Water Manager	17	14	15	7	6	4	5	4	21*
Expert / Consultant	13	14	11	11	8	6	4	2	20*
Policy maker	4	5	4	1	1	3	1	3	6*
Researcher	2	0	1	1	1	1	1	0	2*
Climatic	0	1	1	1	1	1	1	0	1*
Farmer	0	1	0	1	1	0	0	1	1*
TOTAL	61	61	49	39	27	26	18	17	82*

**= including persons who chose multiply options*

<i>What is the main limitation of WaPOR? →</i>	Needs additional data collection	Not trusted yet	Reluctance to use global openly available information	No examples how to apply	There is no main limitation	Not user friendly enough	Others	TOTAL
Academic	12	10	3	8	6	3	4	31*
Operational Land or Water Manager	10	5	7	4	4	3	2	21*
Expert / Consultant	6	5	4	1	4	1	4	20*
Policy maker	3	1	2	0	1	3	0	6*
Researcher	1	1	0	2	0	1	1	2*
Climatic	1	0	0	1	0	0	0	1*
Farmer	0	0	1	0	0	0	0	1*
TOTAL	33	22	17	16	15	11	11	82*

Others (limitations) contain: Lack of interest in water management, no one is there to use the information, no validation results, too low resolution and the concept of water productivity is not well known and not enough internalized by professionals

**= including persons who chose multiply options*

3.2.3 Number of accessing WaPOR

<i>Did you use WaPOR? →</i>	Yes, for study and research	No, there is no direct opportunity in my work	Yes, for operational improvement	No, it is too difficult to use	TOTAL
Accessed WaPOR 0 times	0	11	0	2	13
Accessed WaPOR 1-3 times	17	10	10	2	36*
Accessed WaPOR 4-10 times	6	2	3	0	10*
Accessed WaPOR > 10 times	9	0	3	0	11*
TOTAL	32	23	16	4	70*

*= including persons who chose multiply options

<i>What is the main limitation of WaPOR? →</i>	Needs additional data collection	Not trusted yet	Reluctance to use global openly available information	No examples how to apply	There is no main limitation	Not user friendly enough	Others	TOTAL
Accessed WaPOR 0 times	1	2	2	3	4	2	2	13*
Accessed WaPOR 1-3 times	18	10	9	8	4	5	6	36*
Accessed WaPOR 4-10 times	6	3	3	2	1	1	3	10*
Accessed WaPOR > 10 times	2	3	1	1	4	1	0	11*
TOTAL	27	18	15	14	13	9	11	70*

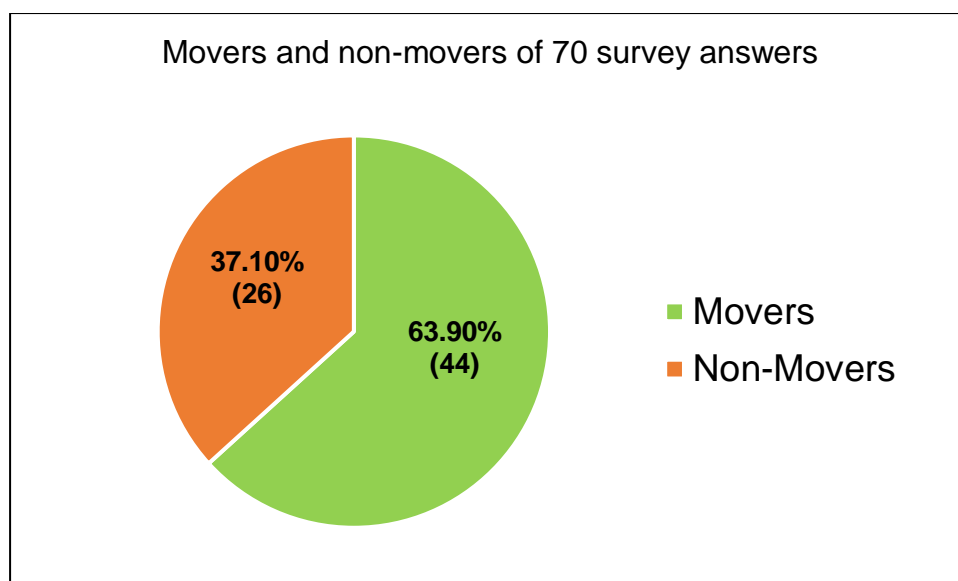
Others (limitations) contain: Lack of interest in water management, no one is there to use the information, no validation results, too low resolution and the concept of water productivity is not well known and not enough internalized by professionals

*= including persons who chose multiply options

3.3 Movers and non-movers

8. 70 survey answers of who followed a Water Accounting and WaPOR-training are divided into movers and non-movers. They are described as:

<u>Movers</u>	<u>Non-movers</u>
<ul style="list-style-type: none"> • Training was useful • Encouragement to use WaPOR database • Accessed the WaPOR many times • Future plans of using WaPOR 	<ul style="list-style-type: none"> • Training was not useful • No access to the WaPOR database • No strong point of WaPOR • No opportunity in work • No future plans to use WaPOR



9. The profiles of the movers and non-movers are showed below.

3.3.1 Profile movers

10. The position of most movers is academic, operational water or land manager or private sector. For all of them the training was useful. This training was a good introduction for water productivity and water accounting using remote sensing and for most people it was related for the current work. The main outcome of the training was better understanding in water productivity, encouragement to use WaPOR, how to analyze water productivity and how to improve water management. WaPOR will be most used for study and research and the strongest points of WaPOR are open and free access, large database and ability to do new analysis. WaPOR can be improved by higher resolution and better classification water and land users. The main opportunity of WaPOR is to improve irrigation management while governments, research organizations and water system managers are the main users.

3.3.2 Profile non-movers

11. The position of most non-movers is national government, however the position of national government is also placed at the movers. The training was for most useful, but not all of them. The training was a good introduction for water productivity. The main outcome was better understanding of in water productivity and analyzing, however there is no encouragement to use WaPOR. Not every one of the survey respondents were able to access WaPOR during the training. WaPOR is difficult to use and there is no direct link for the current work according to the non-movers. The strongest points of WaPOR is open access and large database. The weakest points is the low resolution, difficult classification between water and land users and there is a skill required to use WaPOR. The main opportunity of WaPOR is to improve water management, mostly for governments, research organizations and water system managers.