Food and Agriculture Organization
of the United Nations

RAP - WATER QUALITY SERVICE

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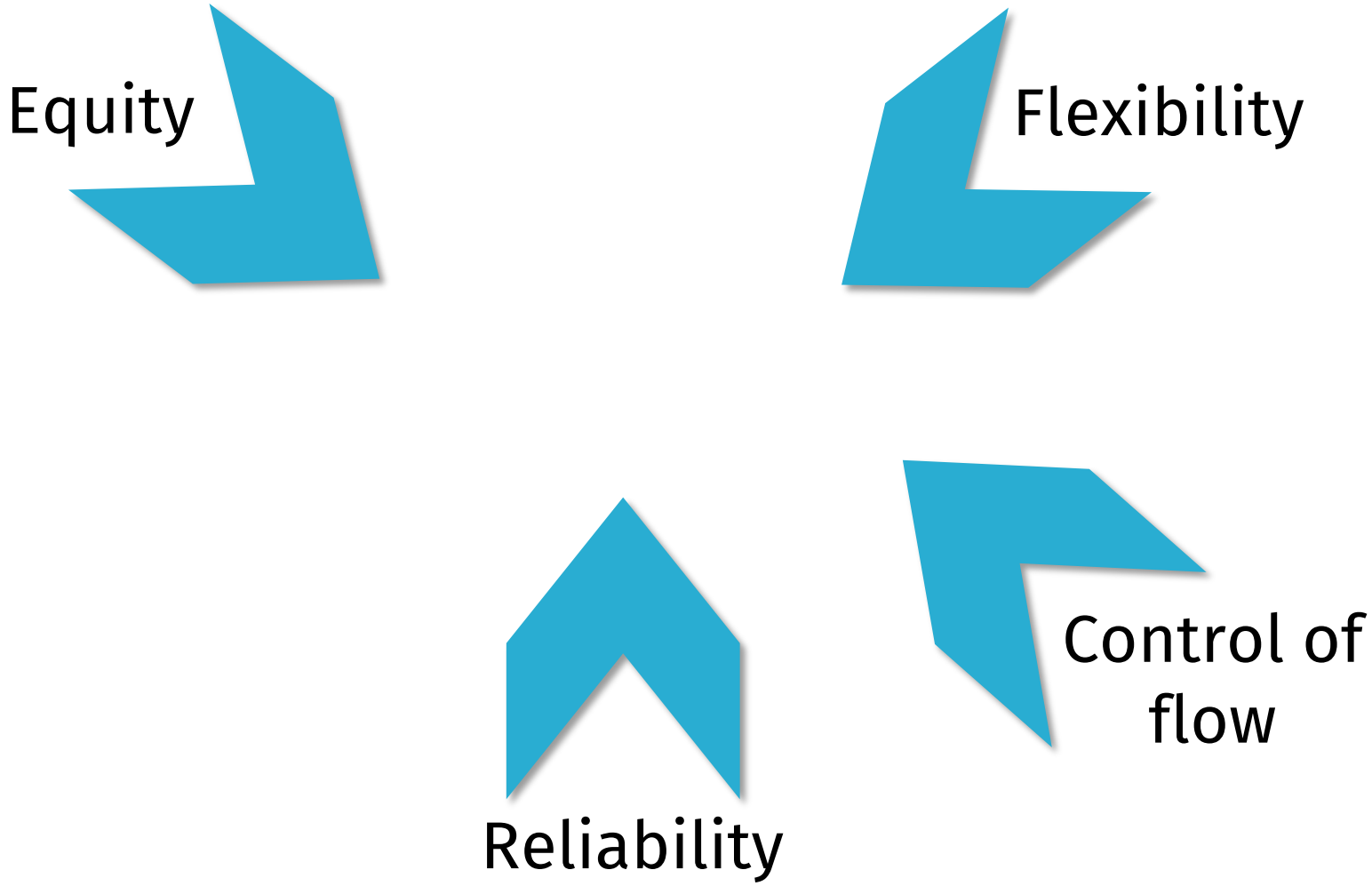
Land and Water Division (NSL), FAO

Tunis, 13 December 2022

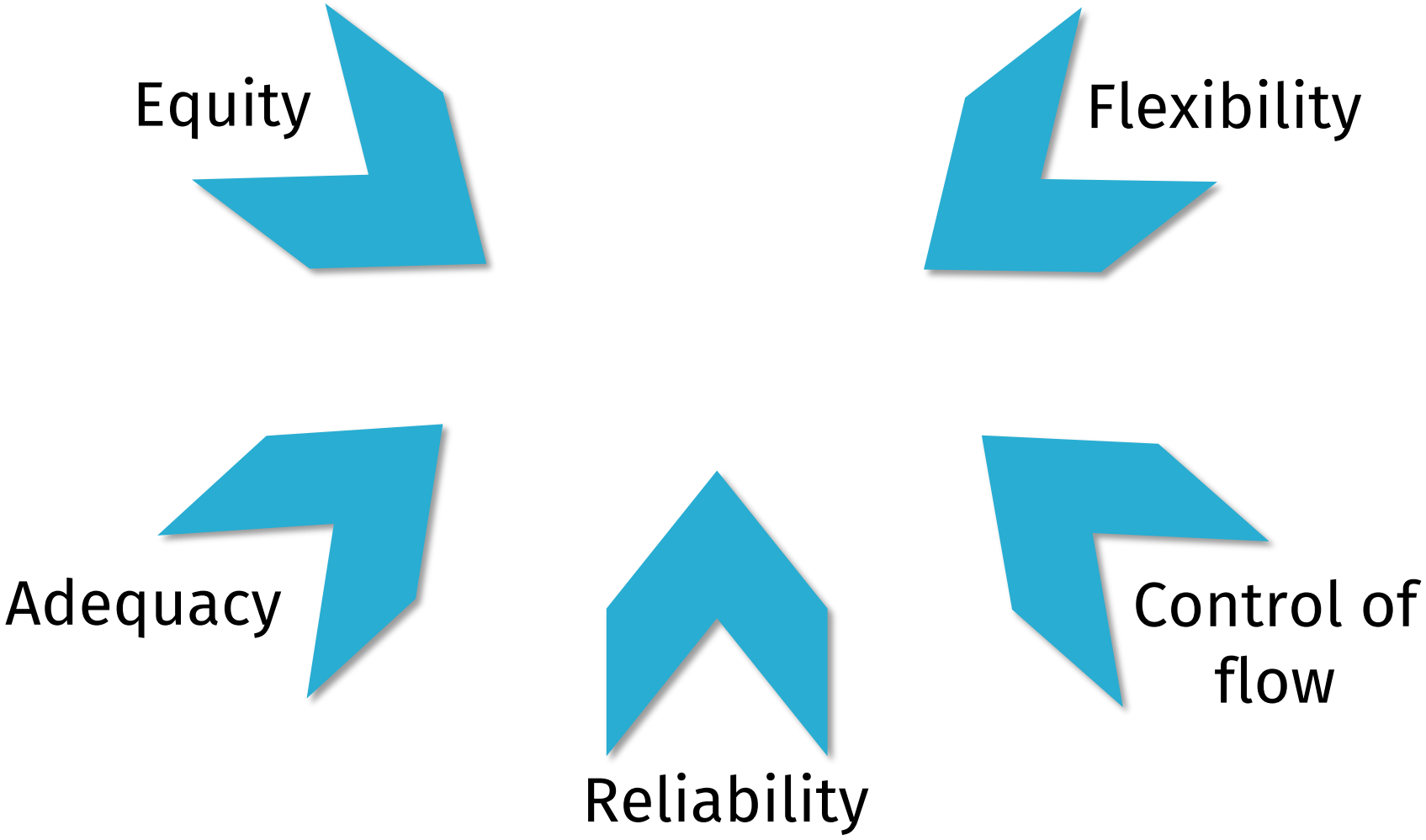
Regional gathering
Tunis, 12 – 16 December 2022

ITALIAN AGENCY
FOR DEVELOPMENT
COOPERATION

PERFORMANCE INDICATORS



PERFORMANCE INDICATORS



File Export

Project information | Water balance | External indicators | **Management** | Management indicators | Water service | Water service indicators

Project

- General project conditions
- Water supply
- Budgetary background
- Employees
- Human resource management indicators
- Project operation
- Water delivery service

Water User Association

- General WUA conditions
- Budgetary background
- Employees
- WUA performance indicators
- Level of Irrigation Management Transfer

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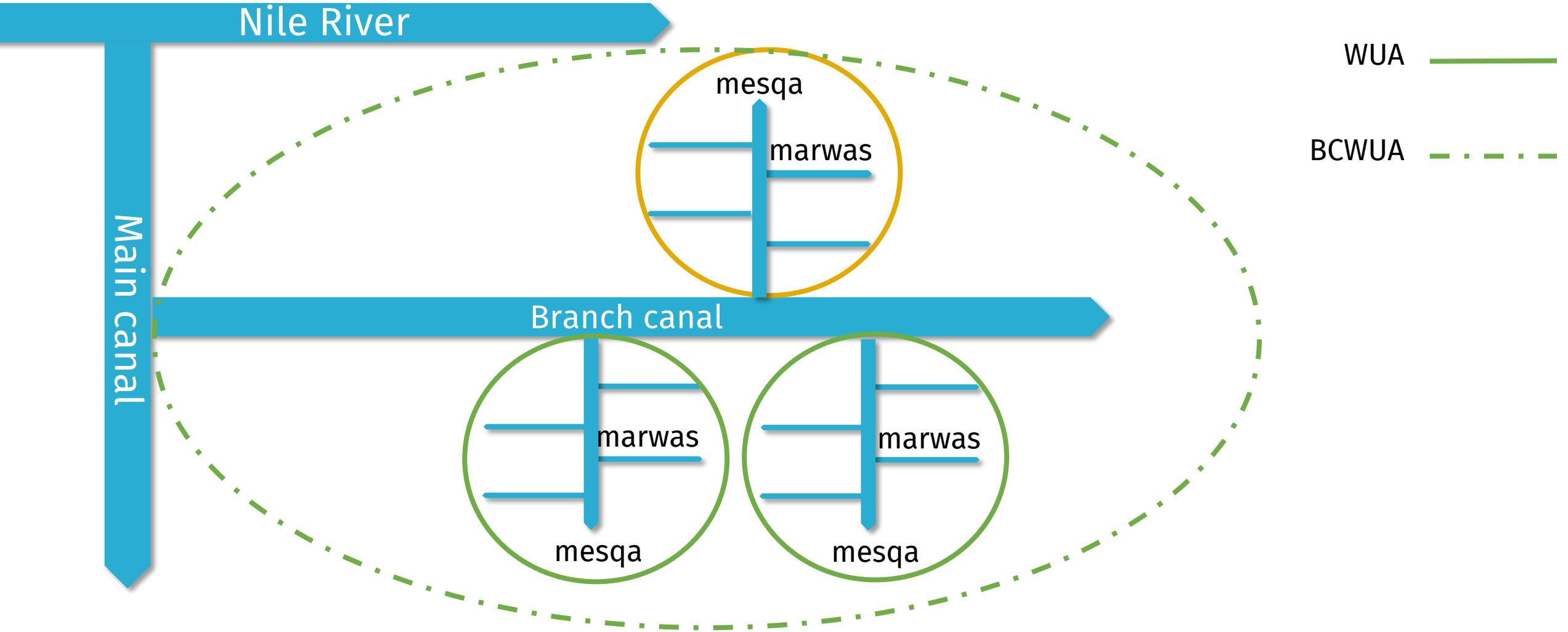
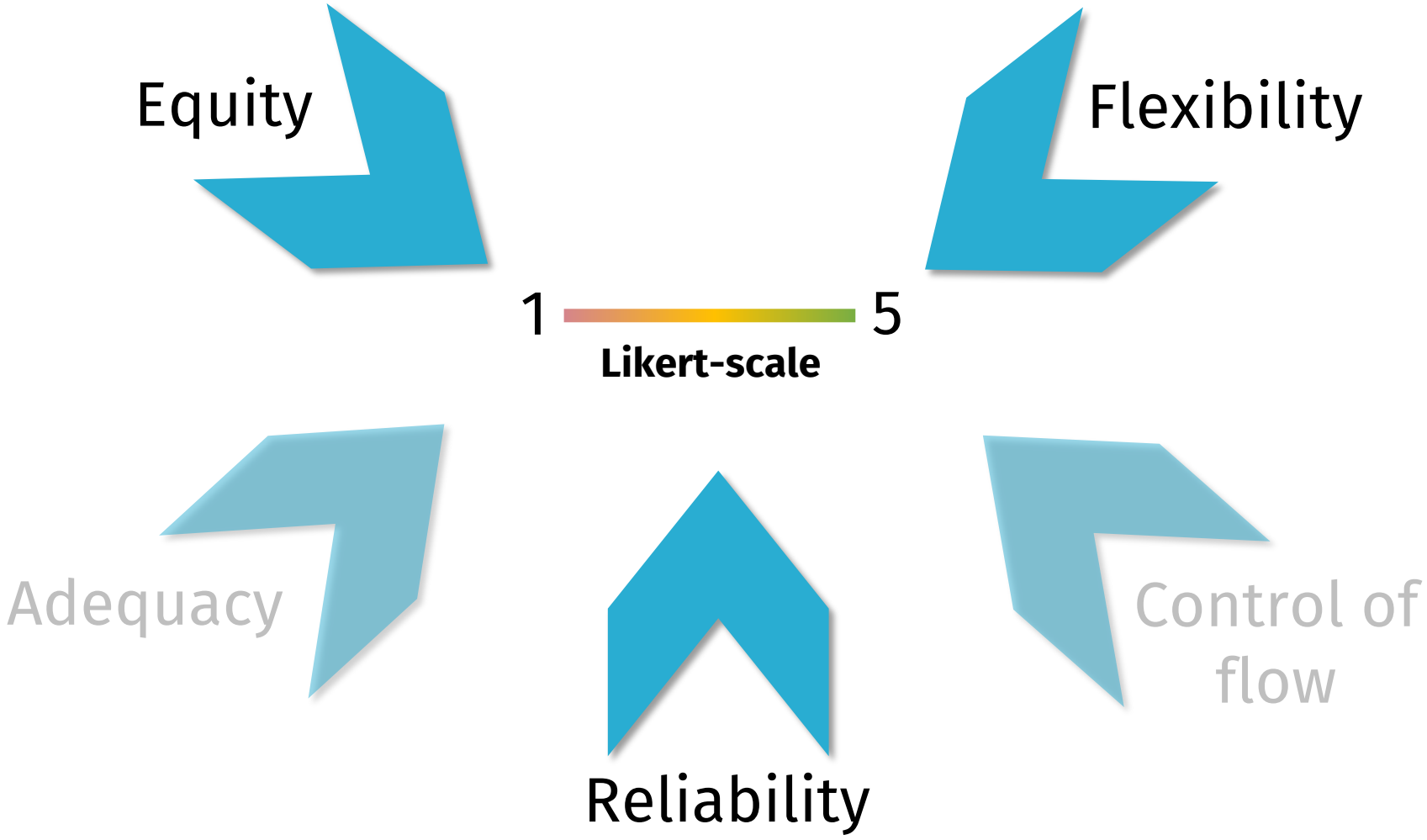
MEASURING THE IMPACT OF MODERNIZATION

A quantitative analysis

APPROACH


Nile River
Main canal
Branch canal
mesqa
marwas
marwas
mesqa
marwas
mesqa
WUA
BCWUA

APPROACH


Equity
Flexibility
1
5
Likert-scale
Adequacy
Control of flow
Reliability

Modernized mesqa

Non-modernized mesqa

APPROACH

Regression adjustment

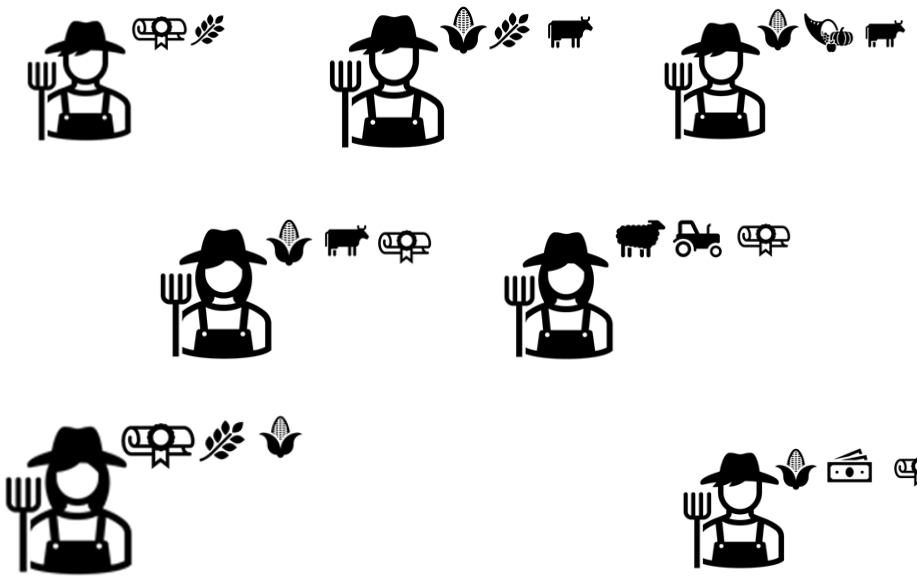
Propensity score matching

Entropy balancing

Multivariate distance

APPROACH - NAÏVE METHODS

Average of modernized mesqa



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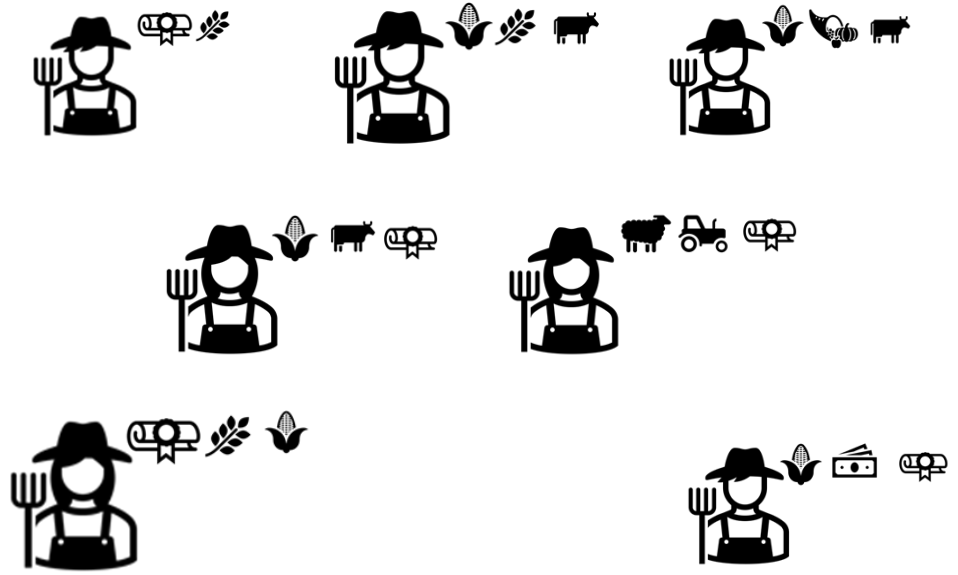
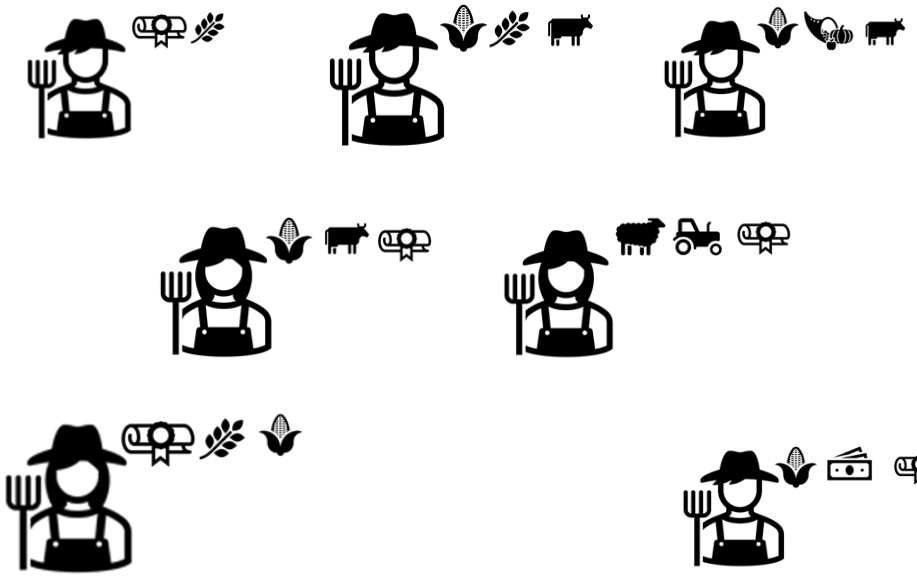
Average of non-modernized mesqa



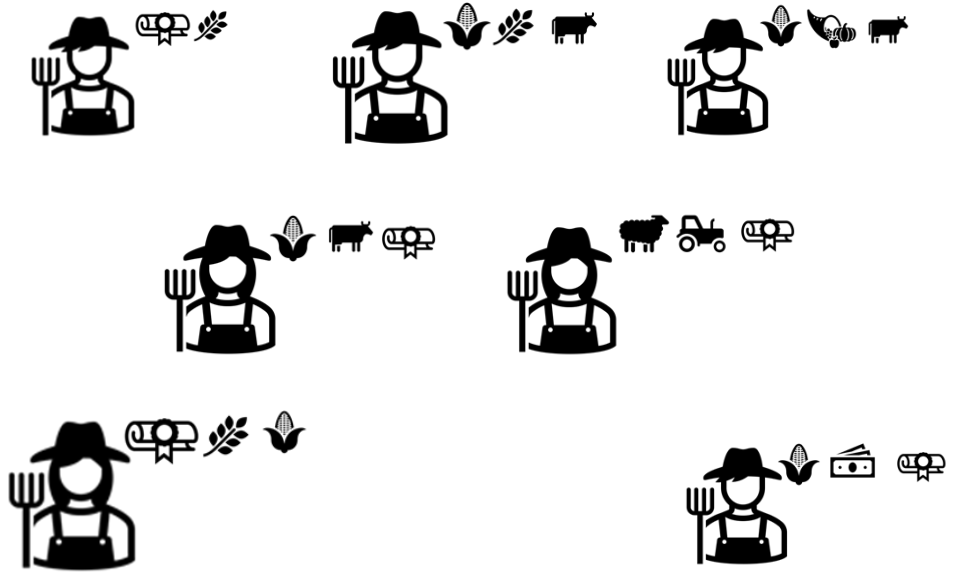
APPROACH – MATCHING

Average of modernized mesqa

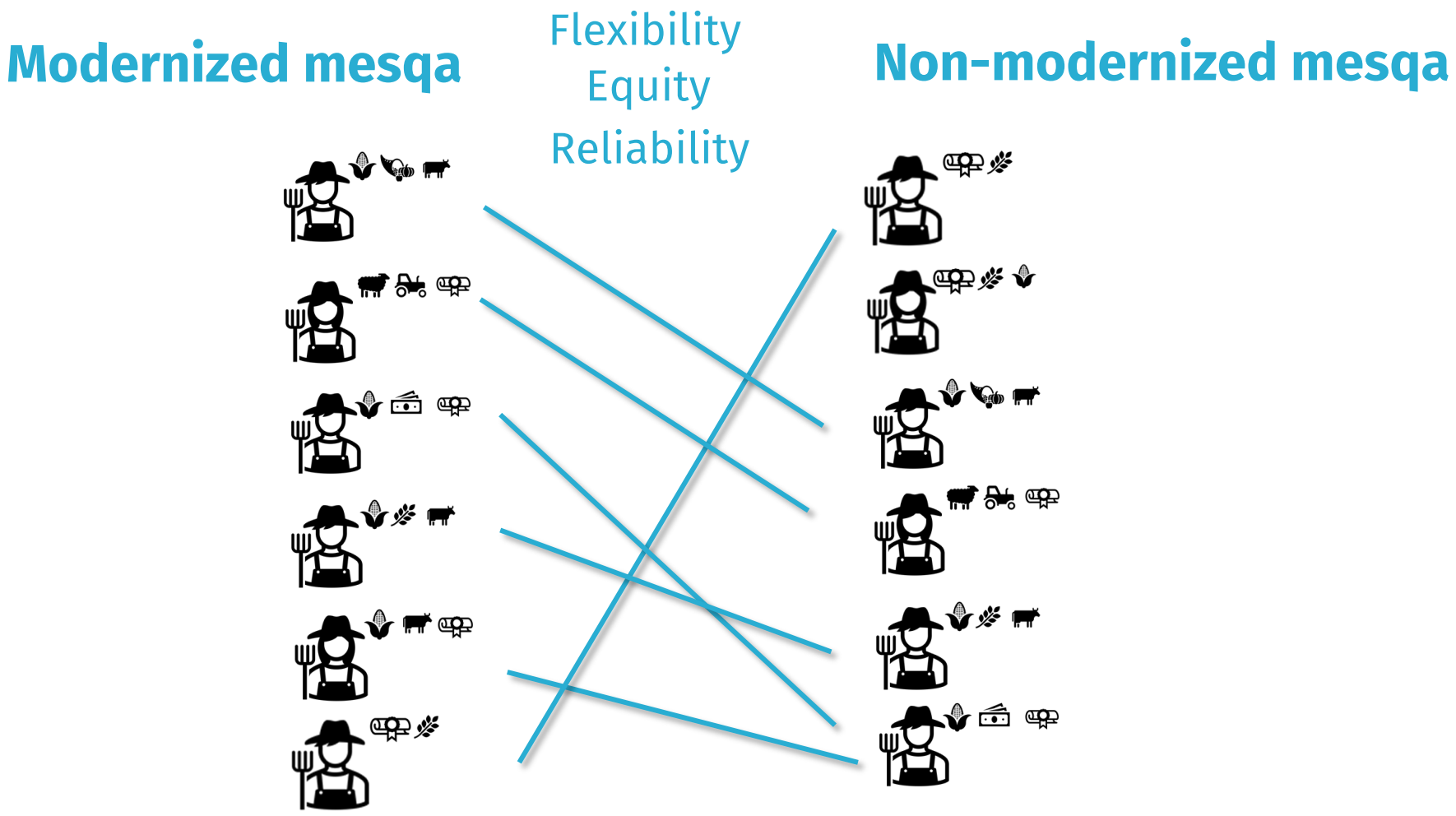


Flexibility
Equity
Reliability

Average of non-modernized mesqa



APPROACH – MATCHING



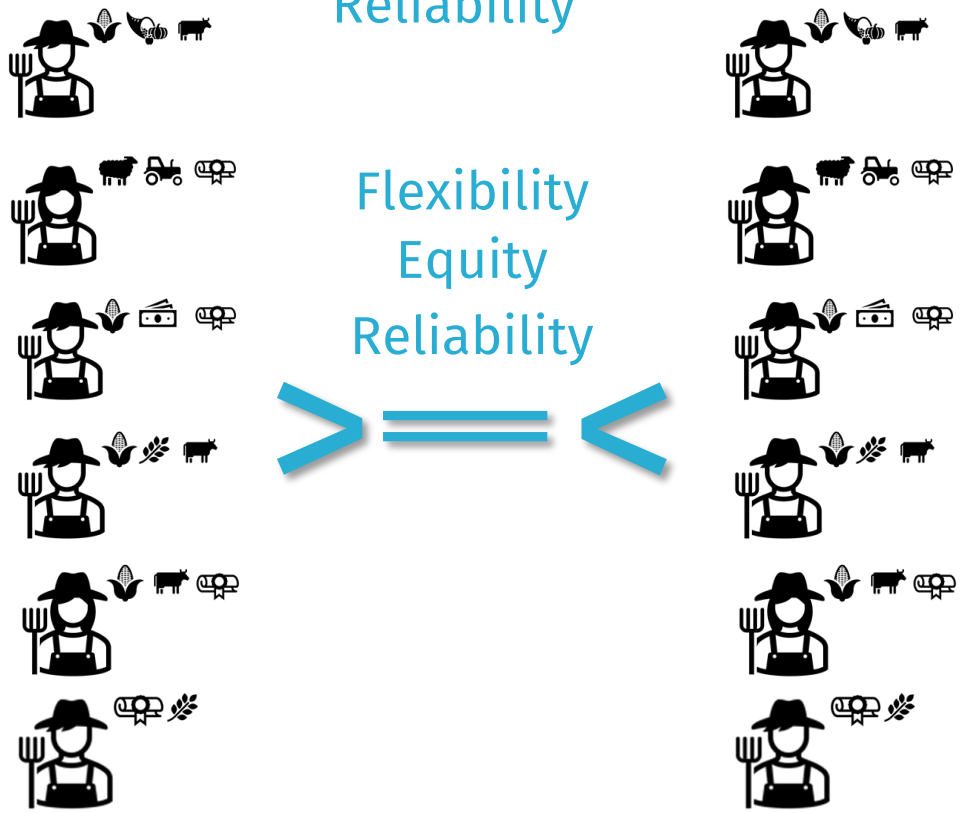
APPROACH – MATCHING

Modernized mesqa

Flexibility
Equity
Reliability

Flexibility
Equity
Reliability

Non-modernized mesqa



QUESTION

COUNTERFACTUAL ANALYSIS:

What would be the score if non-participating farmers participated in the modernization?

RESULTS

	regression adjustment	propensity score nn(1)	propensity score (kernel)	entropy balancing	multivariate-distance
Equity	0.77	0.84	0.74	0.93	0.68
Flexibility	0.68	0.73	0.61	0.76	0.57
Reliability	0.77	0.82	0.79	0.86	0.65

RESULTS

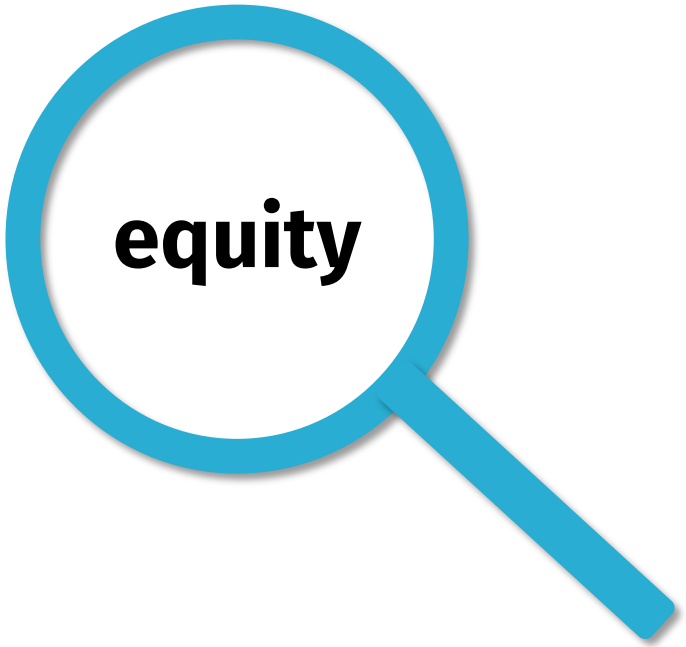
If non-participating farmers participated in the modernization programme, the scores would be **higher by**:

0.68-0.93 for **equity**

0.57-0.76 for **flexibility**

0.65-0.86 for **reliability**

RESULTS



Pressurized irrigation systems provide more equity by default design

Equity is important indicator when farms are scattered around the water sources or **distant** (in some cases in Egypt, 1 km away from the canal)

RESULTS

If the water distribution is **rotational**, individual arrangements are necessary to improve flexibility

Flexibility is greatly restricted in Egypt due to the **water budget system**, established at all levels of canals

RESULTS

Discharge at hydrant level is easier to **measure** in pressurized irrigation system

Reliable water service is essential in Egypt due to the lack of water and mere **dependence** on a single water sources

DISCUSSION