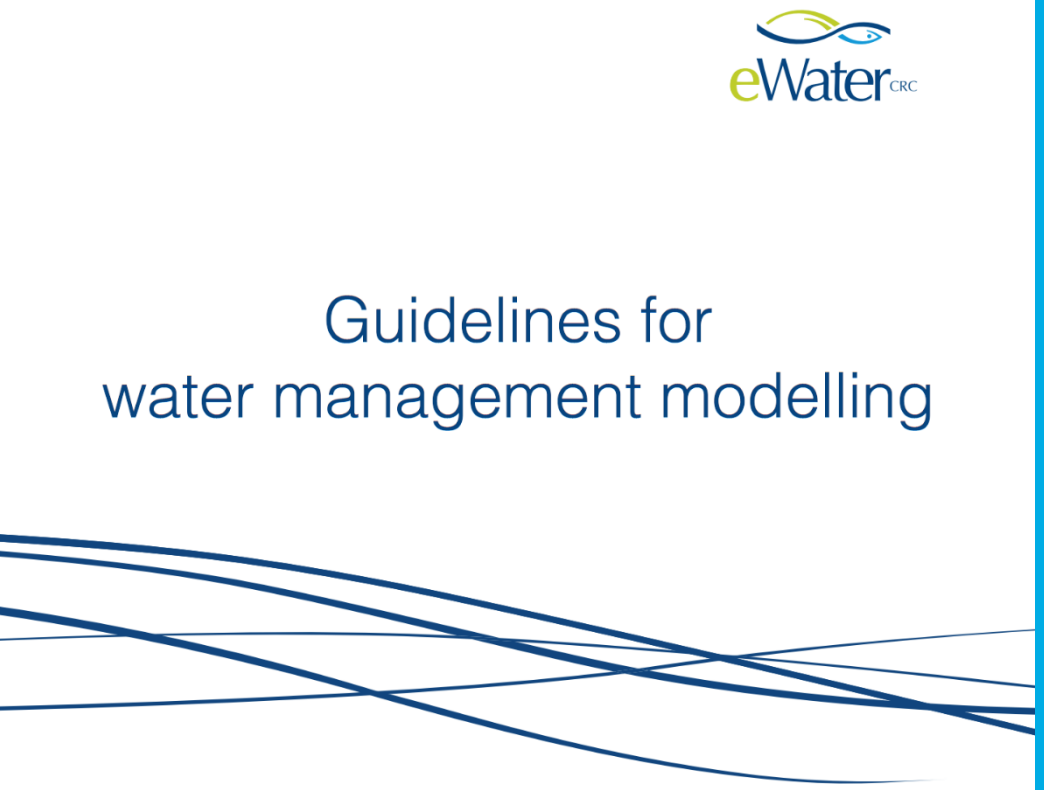
MAINSTREAMING AND MODELLING

A systematic review of how gender analysis could impact water management modelling

Evangeline Packett Land and Water, CSIRO 13/02/2018

SDIP. 2018. "Sustainable Development Investment Portfolio". *Sustainable Development Investment Portfolio*. https://research.csiro.au/sdip/.

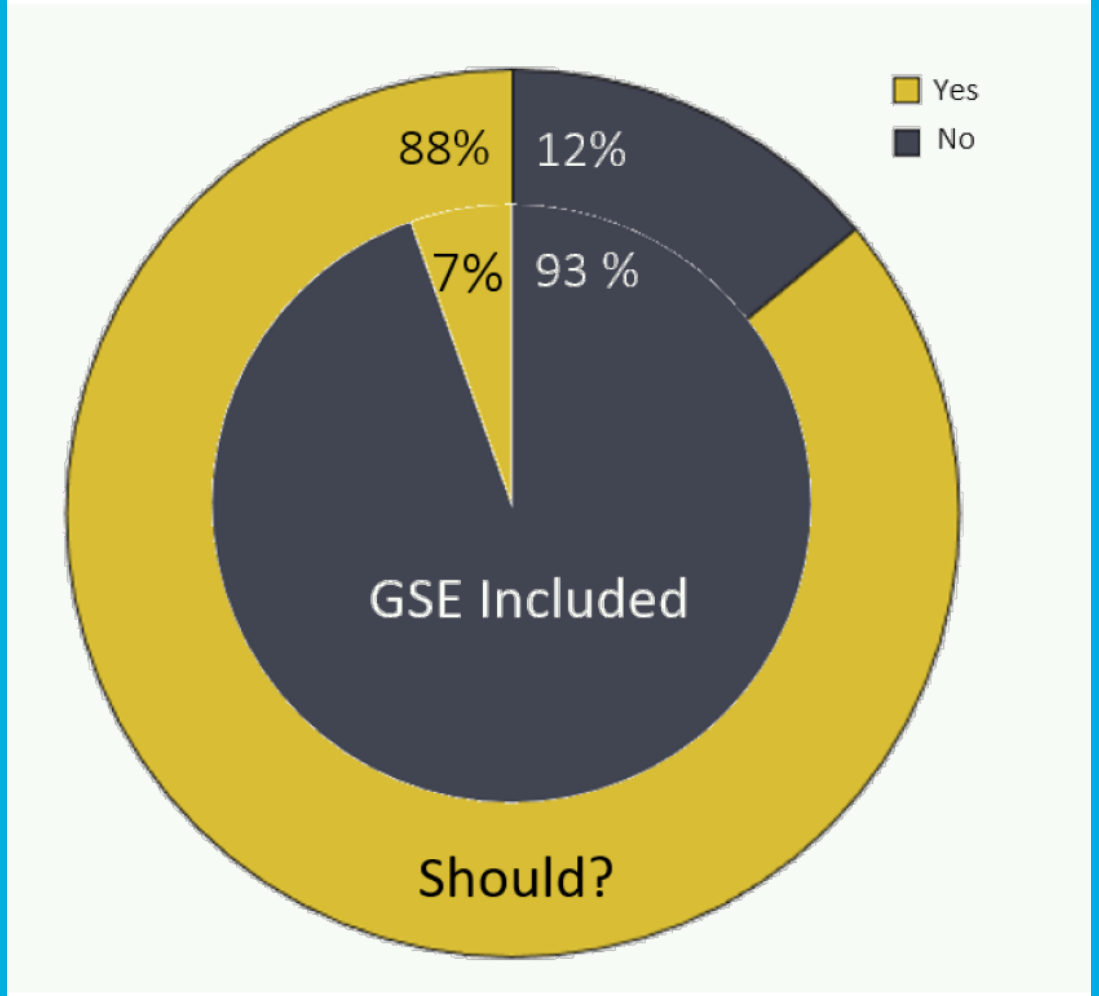


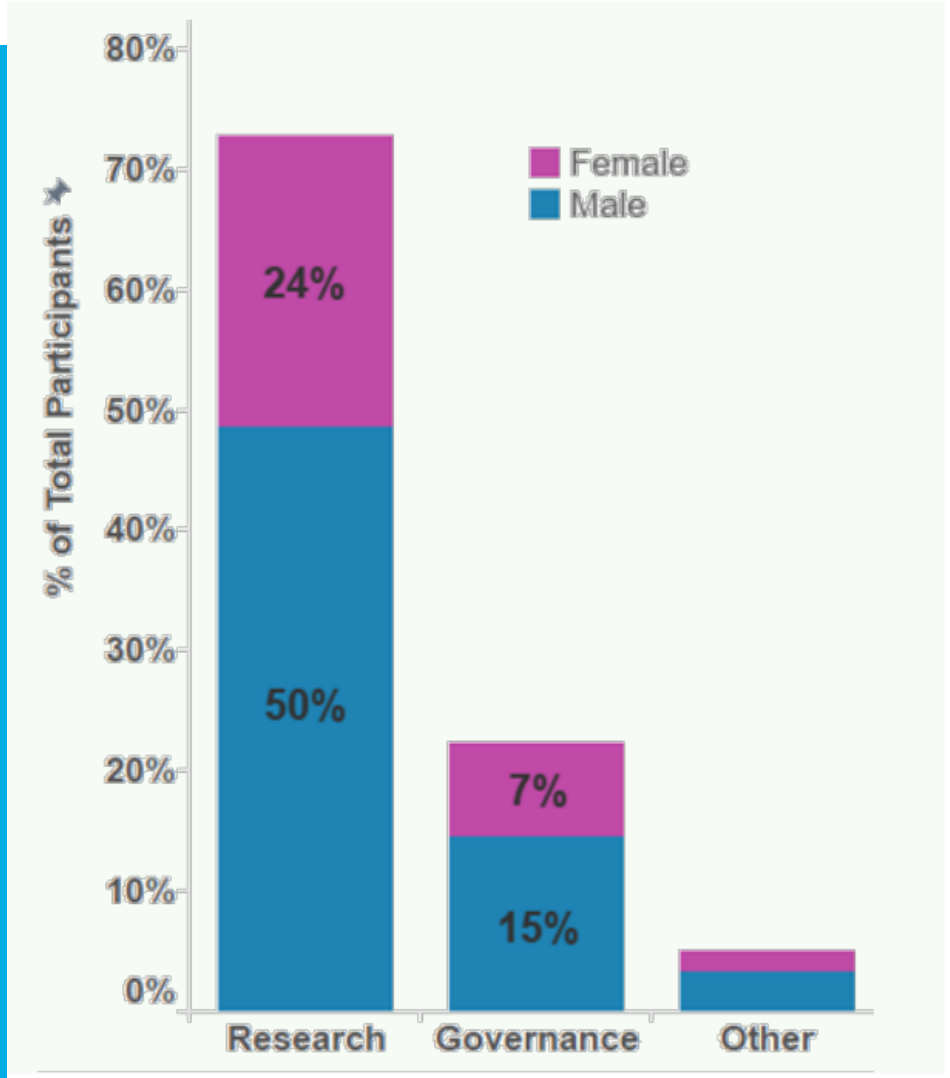
Black, D., P. Wallbrink, P. Jordan, D. Waters, C. Carroll, and J. Blackmore. 2011. "Guidelines For Water Management Modelling". Towards Best-Practice Model Application. Canberra: eWater Cooperative Research Centre.

1992 DUBLIN STATEMENT: 3RD PRINCIPLE

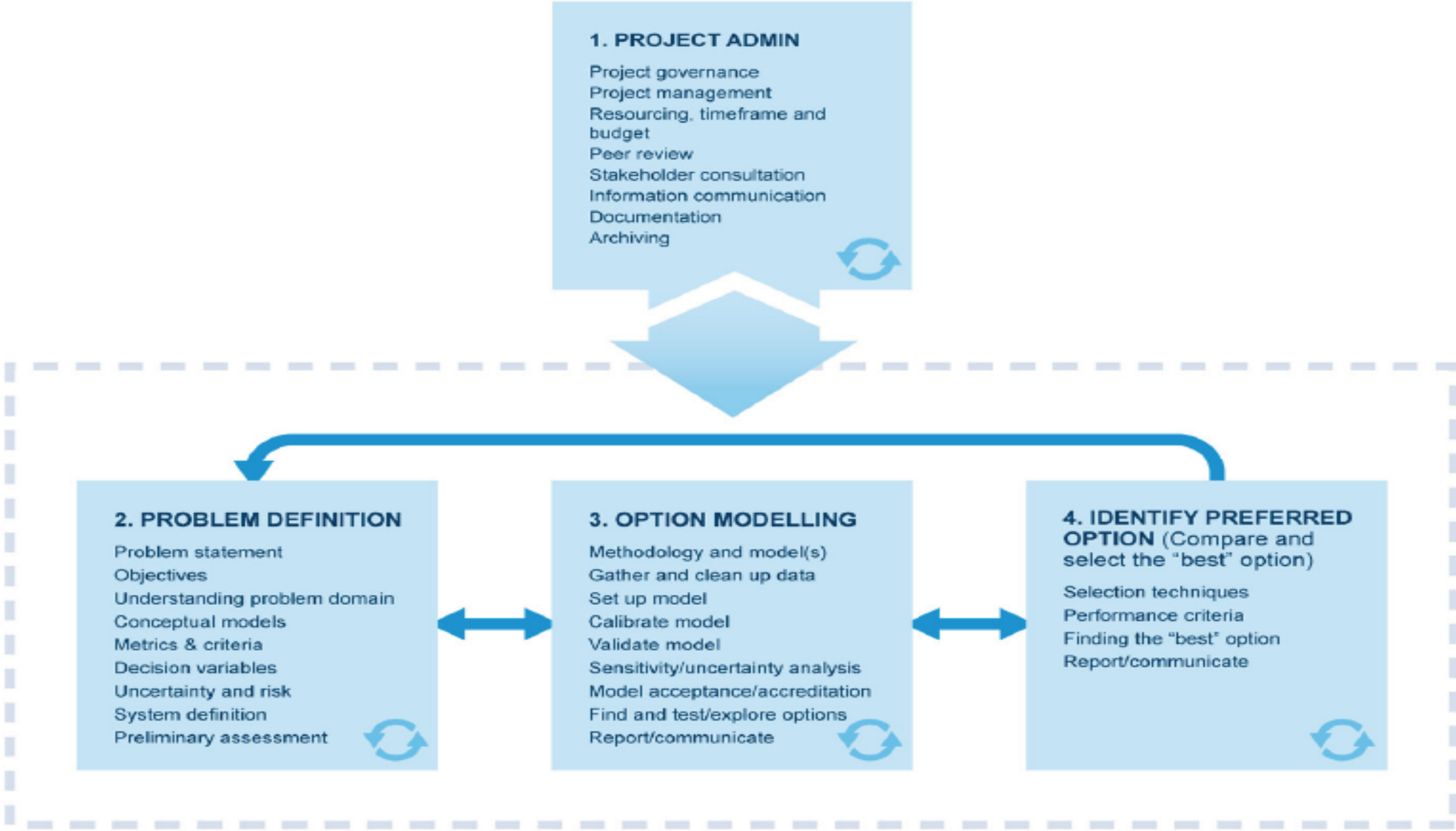
"Women play a central part in the provision, management and safeguarding of water.

SEI SURVEY ON GENDER AND SOCIAL EQUITY IN MODELLING ACTIVITIES

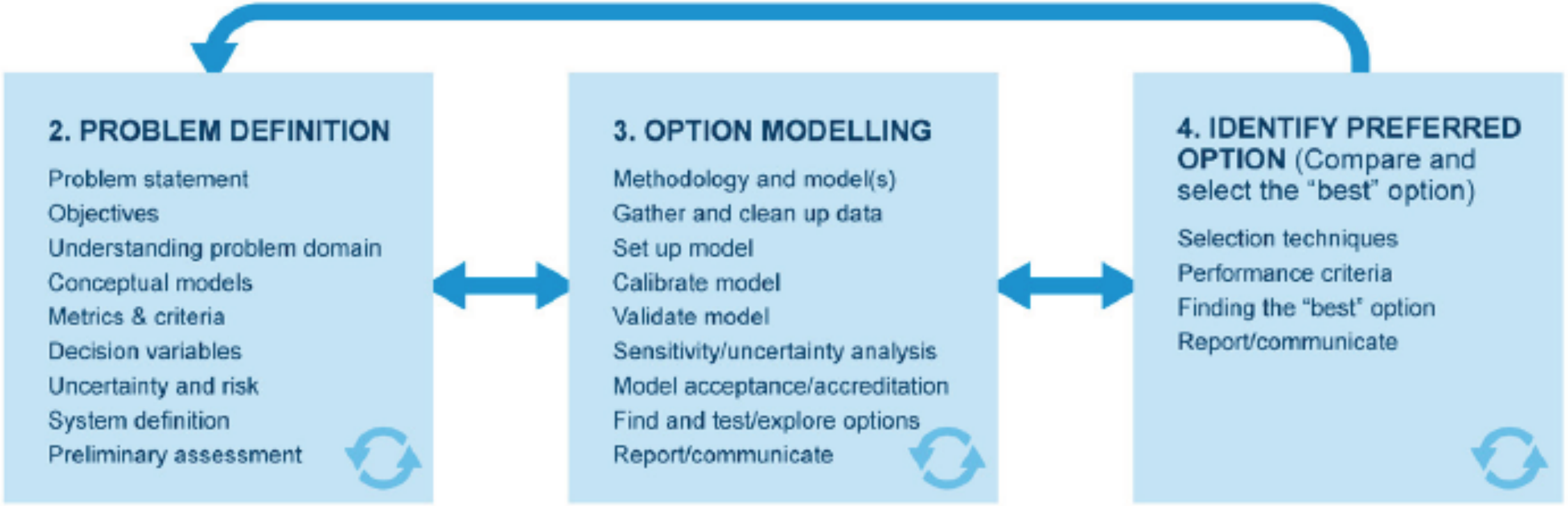




SEI. 2017. *Fact Sheet GSE Interview And Survey Results*. Image. https://www.sei-international.org/mediamanager/documents/Initiatives/Gender-LEAP-WEAP-Modelling-Survey-2016.pdf.


1. PROJECT ADMIN
Project governance
Project management
Resourcing, timeframe and budget
Peer review
Stakeholder consultation
Information communication
Documentation
Archiving
2. PROBLEM DEFINITION
Problem statement
Objectives
Understanding problem domain
Conceptual models
Metrics & criteria
Decision variables
Uncertainty and risk
System definition
Preliminary assessment
3. OPTION MODELLING
Methodology and model(s)
Gather and clean up data
Set up model
Calibrate model
Validate model
Sensitivity/uncertainty analysis
Model acceptance/accreditation
Find and test/explore options
Report/communicate
4. IDENTIFY PREFERRED OPTION (Compare and select the "best" option)
Selection techniques
Performance criteria
Finding the "best" option
Report/communicate

METHODOLOGY



PROBLEM DEFINITION

2. PROBLEM DEFINITION

Problem statement
Objectives
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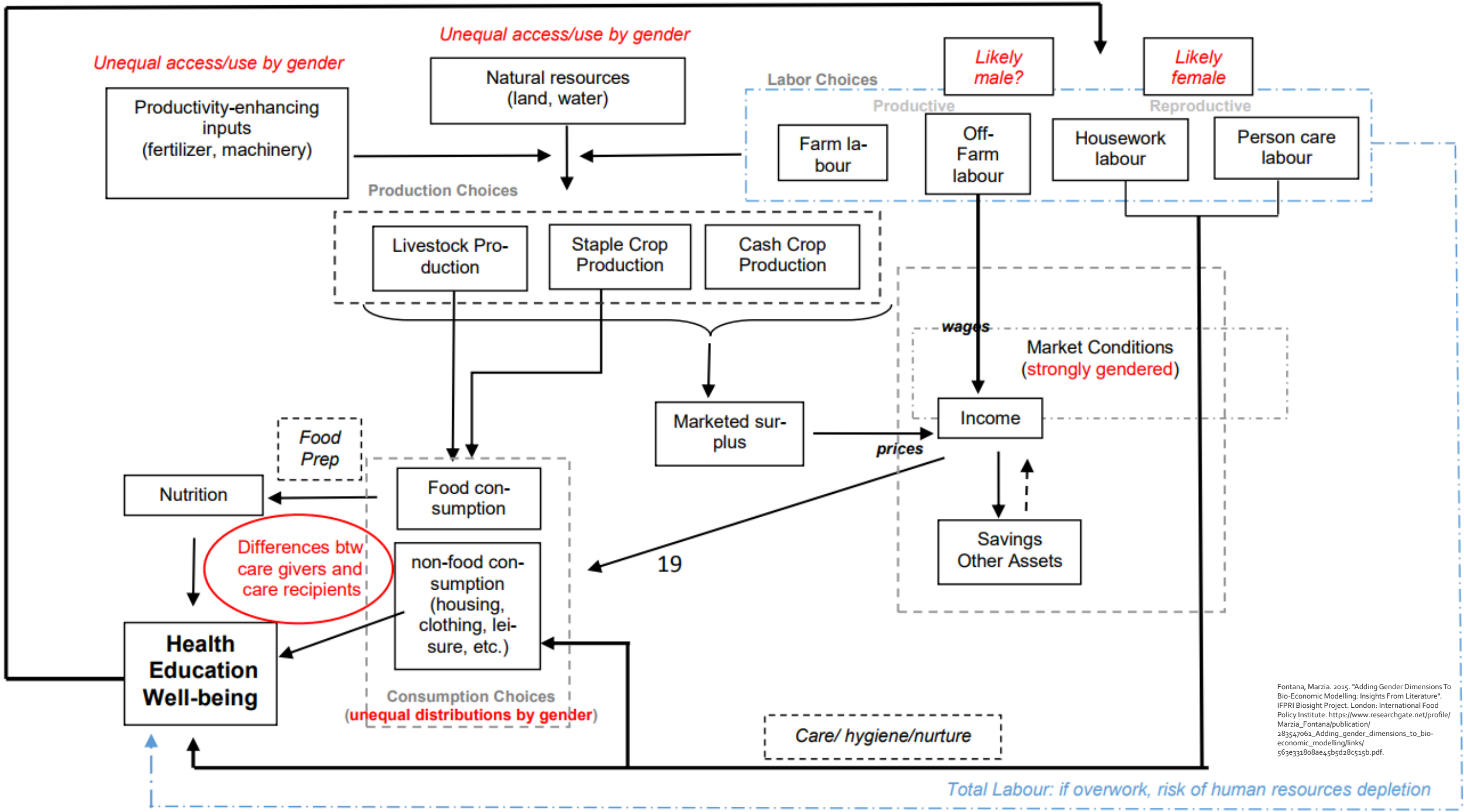
System definition
Preliminary assessment



Fontana, Marzia. 2015. "Adding Gender Dimensions To Bio-Economic Modelling: Insights From Literature". IFPRI Biosight Project. London: International Food Policy Institute. https://www.researchgate.net/profile/Marzia_Fontana/publication/283547061_Adding_gender_dimensions_to_bio-economic_modelling/links/563e331808ae45b5d28c515b.pdf.

IDENTIFYING THE PREFERRED OPTION

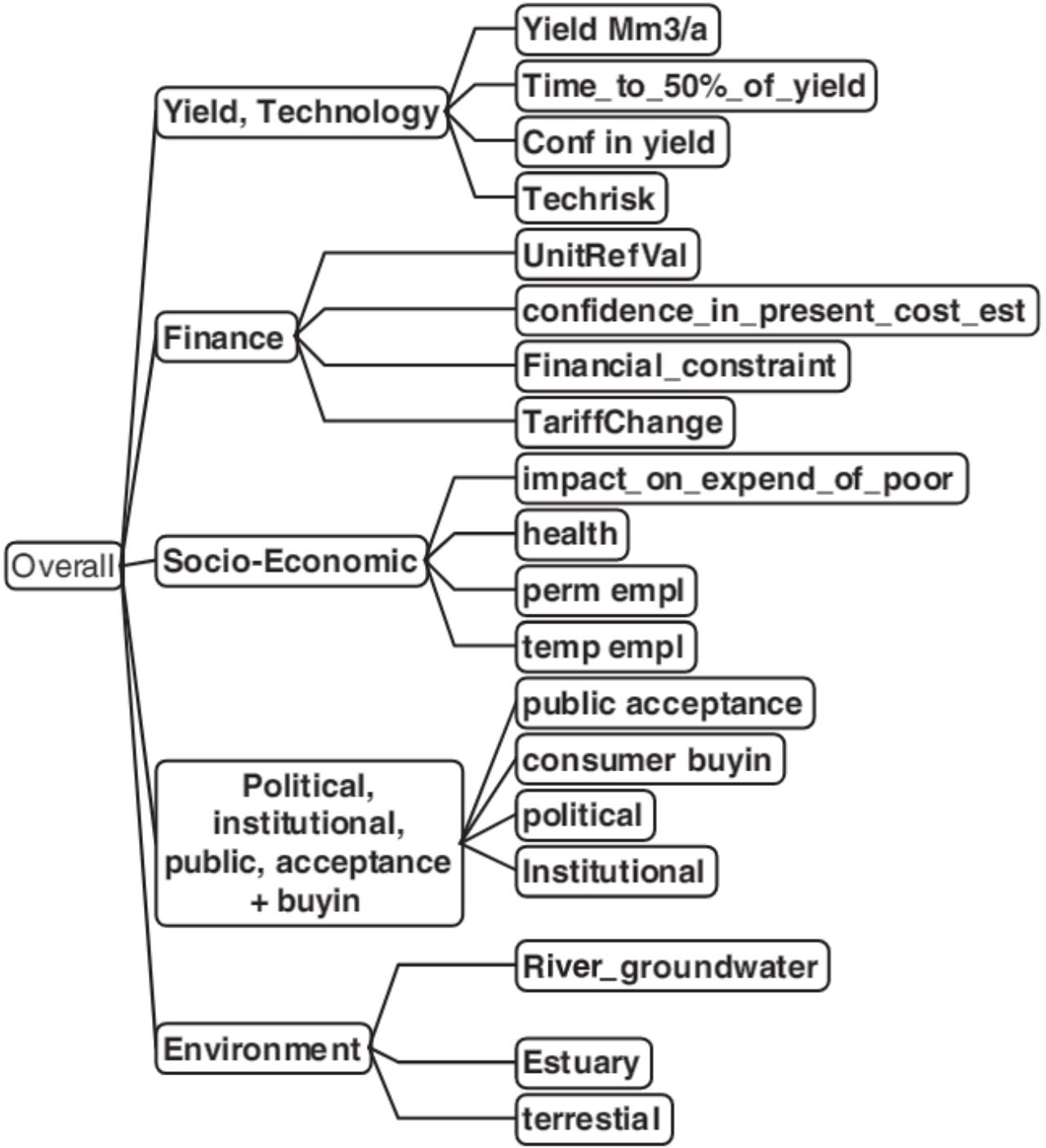
4. IDENTIFY PREFERRED OPTION (Compare and select the "best" option)

Selection techniques

Performance criteria

Finding the "best" option

Report/communicate



Joubert, Alison, Theodor J. Stewart, and Rolfe Eberhard. 2003. "Evaluation Of Water Supply Augmentation And Water Demand Management Options For The City Of Cape Town". *Journal Of Multi-Criteria Decision Analysis* 12 (1): 17-25. doi:10.1002/mcda.342.

Relative weights on main criteria		Relative weights within main criteria		Rescaled weights
Yield & technology	0.09	Yield Mm^3/a	0.334	0.030
		Time to 50% yield	0.140	0.013
		Confidence in yield	0.326	0.029
		Technical risk	0.200	0.018
Finance	0.38	Unit reference value	0.400	0.152
		Confidence in cost	0.200	0.076
		Financial constraints	0.100	0.038
		Tariff change	0.300	0.114
Socio-economic	0.15	Expenditure	0.040	0.006
		Health	0.640	0.096
		Permanent employment	0.080	0.012
		Temporary employment	0.240	0.036
Acceptance & buy-in	0.23	Public acceptance	0.250	0.058
		Consumer buyin	0.250	0.058
		Political accpt	0.250	0.058
		Institutional capacity	0.250	0.058
Environment	0.15	River/groundwater	0.470	0.071
		Estuary	0.350	0.053
		Terrestrial	0.180	0.027

Joubert, Alison, Theodor J. Stewart, and Rolfe Eberhard. 2003. "Evaluation Of Water Supply Augmentation And Water Demand Management Options For The City Of Cape Town". *Journal Of Multi-Criteria Decision Analysis* 12 (1): 17-25. doi:10.1002/mcda.342.

OPTION MODELLING

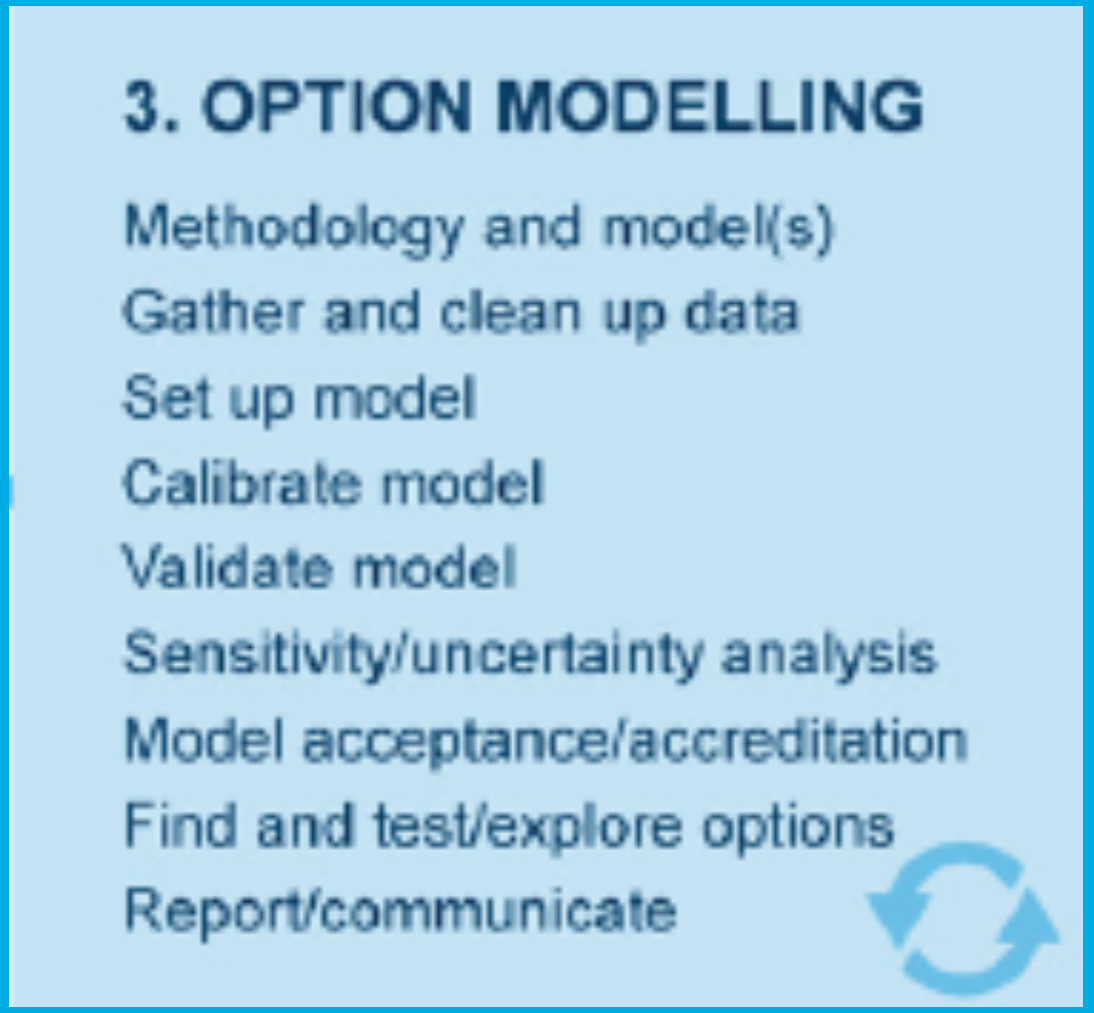
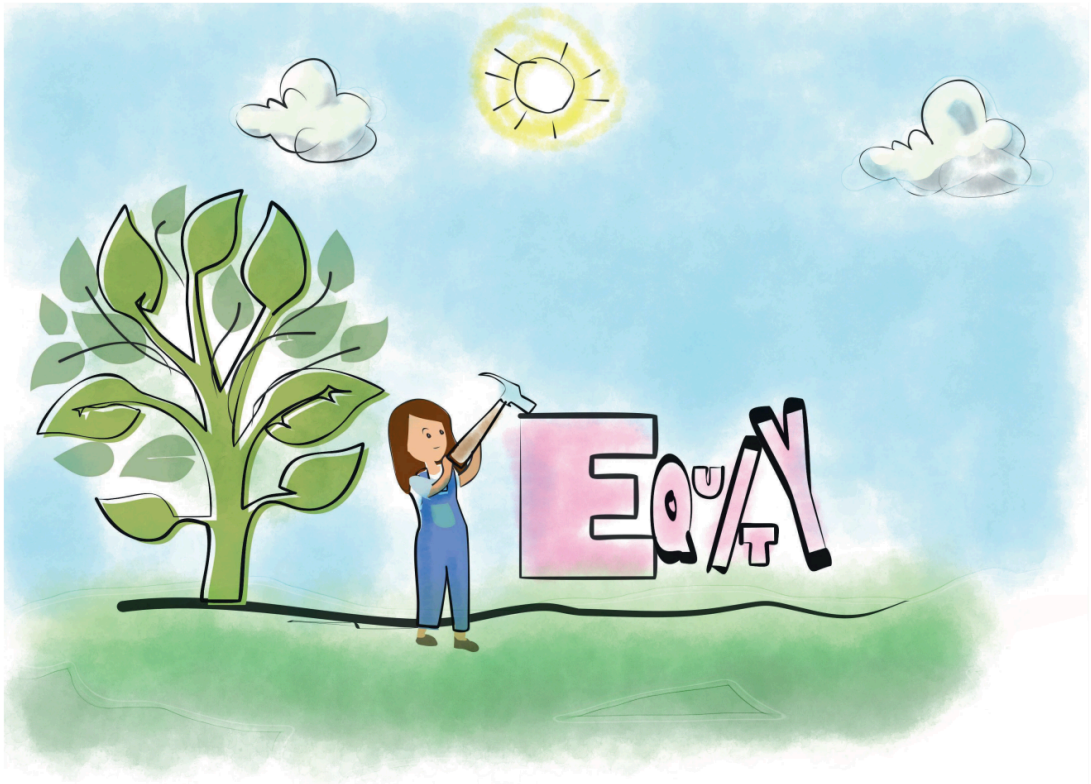


Table 5–2 Statistical performance measures (metrics) and their relevance in various study types (Y – Yes, N – No)

Metric	Purpose					
	Runoff Yield	Climate change	Landuse change	Low flow	Water quality	Peak flow / floods
Difference in total runoff	Y	Y	Y	N	N	Y
Difference in total runoff over different seasons of the year*	Y	Y	Y	Y	Y	Y
Difference in total runoff contained within high, medium and low parts of the flow duration curve	Y	Y	Y	Y	Y	Y (high flows)
Difference in proportion of time that cease to flow occurs	N	Y	Y	Y	Y	N
Difference in the slope of logarithm of flow versus time for baseflow recession periods	N	N	Y	Y	Y	N
Mean square error between observed and modelled runoff	Y	Y	Y	N	N	Y
Coefficient of determination (often referred to as r^2)	Y	Y	Y	N	N	Y
Nash Sutcliffe coefficient of efficiency on daily flows	Y	Y	Y	N	N	Y
Nash Sutcliffe coefficient of efficiency on monthly accumulated flows	Y	Y	Y	N	N	N
Nash Sutcliffe coefficient of efficiency calculated using logarithm transformed flows	N	Y	Y	Y	Y	N

J, Vaze, Jordan P, Beecham R, Frost A, and Summerell G. 2011. "Guidelines For Rainfall-Runoff Modelling". Towards Best Practice Model Application. Canberra: eWater Cooperative Research Centre. http://ewater.org.au/uploads/files/eWater-Guidelines-RRM-(v1_0-Interim-Dec-2011).pdf.

SEI STOCKHOLM ENVIRONMENT INSTITUTE



Guidance Materials for Mainstreaming Gender Perspectives into Model-based Policy Analysis

Marisa Escobar, Laura Forni, Emily Ghosh and Marion Davis
Stockholm Environment Institute – U.S. Center

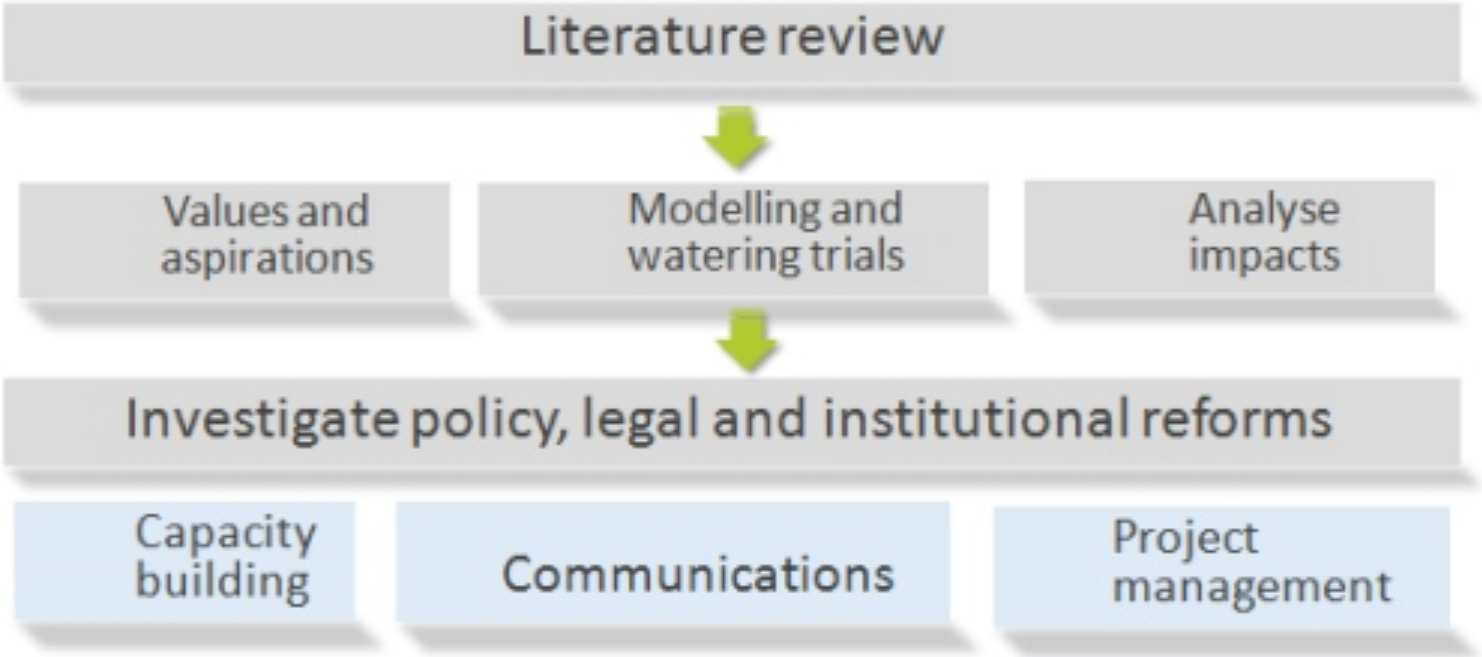
NATIONAL CULTURAL FLOWS RESEARCH PROJECT

IndigenousNations

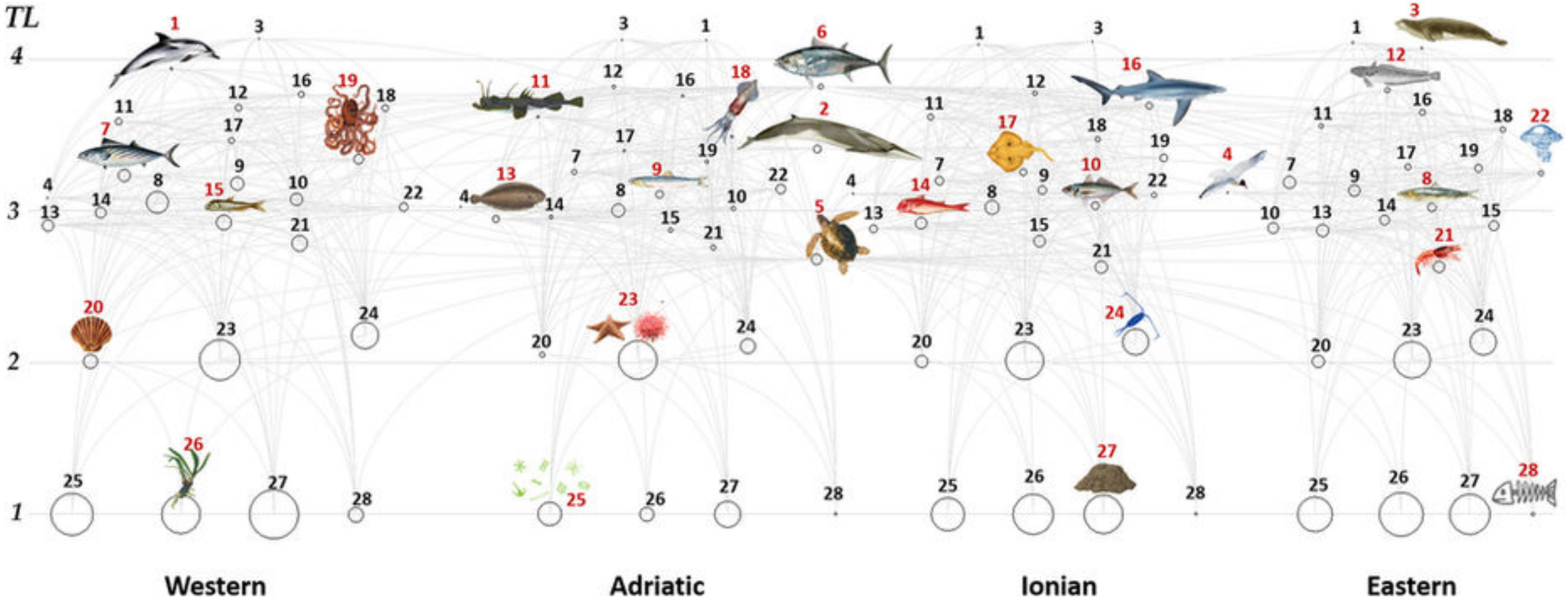
www.mldrin.org.au

Cultural Flows Research Project

Components...



"Video Conference Notes 27 October 2016 - Indigenous Ecology". 2018. *Swifft.Net.Au*. http://www.swifft.net.au/cb_pages/video_conference_notes_27_october_2016_-_indigenous_ecology.php.



- Mediterranean Sea ecosystem
- Each circle represents a functional group
- 103 functional groups in total
- Number shows functional group code

Piroddi, Chiara, Marta Coll, Camino Liquete, Diego Macias, Krista Greer, Joe Buszowski, Jeroen Steenbeek, Roberto Danovaro, and Villy Christensen. 2017. "Historical Changes Of The Mediterranean Sea Ecosystem: Modelling The Role And Impact Of Primary Productivity And Fisheries Changes Over Time". *Scientific Reports* 7: 44491. doi:10.1038/srep44491.

SDIP. 2018. *Climate Change Impacts On Water In South Asia*. Image. Accessed February 8. https://i1.wp.com/research.csiro.au/sdip/wp-content/uploads/sites/98/2016/09/bangladesh