

*Regional Workshop on Statistical Literacy:  
Increasing Effective Use of Agricultural and Rural Statistics  
13-17 July 2015*

## Session 1.2 Statistical Capability Framework



### Objectives of the presentation

Introduce a Statistical Capability Framework (SCF)

Understand the three dimensions of the SCF, including the:

- required statistical capabilities
- main processes required to undertake work in the capability dimensions

Relate the SCF to the Statistical Literacy Framework



## Statistical Capability Framework

Important to have a framework to understand what statistical capabilities are required by a workforce

An increase in statistical capability will help transform the way users and producers:

- **C**ommunicate,
- **M**anage, and
- **U**se

statistical assets towards informed decision-making.

Source: Australian Bureau of Statistics, Draft Statistical Capability Framework  
(<http://www.abs.gov.au/websitedbs/a3121120.nsf/home/ABS+Statistical+Capability+Framework>)



## Statistical Capability Framework

A draft SCF has been developed by the Australian Bureau of Statistics.

- To provide a **standard set of capabilities** and offer a common language to describe those capabilities.
- To enable discussions to occur around **statistical capability needs analysis** and future development requirements.

The SCF has been designed to be **applicable and relevant to not just NSOs**, but to all users, producers and leaders in the wider statistical community.

Source: Australian Bureau of Statistics, Draft Statistical Capability Framework  
(<http://www.abs.gov.au/websitedbs/a3121120.nsf/home/ABS+Statistical+Capability+Framework>)



# Statistical Capability Framework

## Scope

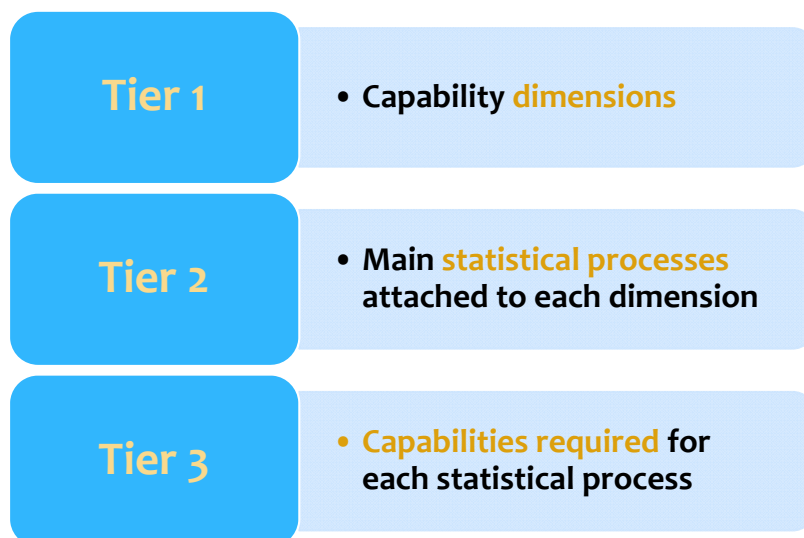
- Defines and articulates the **full spectrum of capabilities required by users and producers when undertaking any kind of statistical work**

Source: Australian Bureau of Statistics, Draft Statistical Capability Framework  
(<http://www.abs.gov.au/websitedbs/a3121120.nsf/home/ABS+Statistical+Capability+Framework>)



# Statistical Capability Framework

## Structure

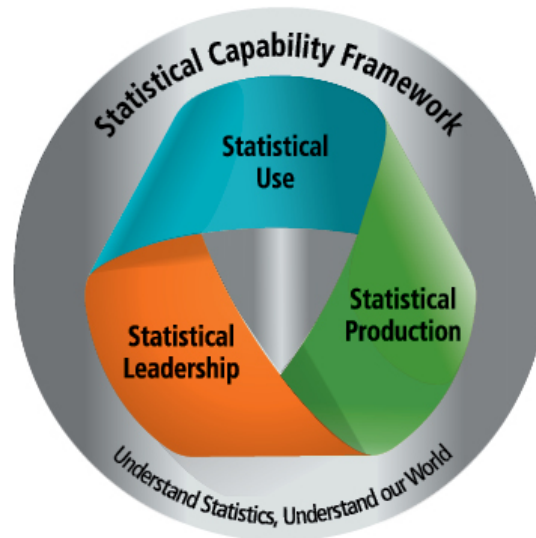


Source: Australian Bureau of Statistics, Draft Statistical Capability Framework  
(<http://www.abs.gov.au/websitedbs/a3121120.nsf/home/ABS+Statistical+Capability+Framework>)



# Statistical Capability Framework – Tier 1

## Three dimensions of the Statistical Capability Framework



Source: Australian Bureau of Statistics, Draft Statistical Capability Framework  
(<http://www.abs.gov.au/websitedbs/a3121120.nsf/home/ABS+Statistical+Capability+Framework>)



# Statistical Capability Framework – Tier 2

## Statistical Use

- Discovering & Assessing
- Analysing and Interpreting
- Communicating
- Applying

## Statistical Production

- Specifying
- Designing and Building
- Acquiring and Processing
- Validating and Disseminating
- Evaluating

## Statistical Leadership

- Positioning
- Influencing
- Enabling

Source: Australian Bureau of Statistics, Draft Statistical Capability Framework  
(<http://www.abs.gov.au/websitedbs/a3121120.nsf/home/ABS+Statistical+Capability+Framework>)



## Statistical Capability Framework – Tier 2

### Statistical Use

- **Discovering & Assessing** → finding sources of information and determining whether that information can appropriately inform your analysis
- **Analysing and Interpreting** → using appropriate techniques to find key messages in the data
- **Communicating** → presenting the key messages you have found in the data in a clear and accurate manner
- **Applying** → using the statistical information to inform the outcome of the research and/or policy need

Source: Australian Bureau of Statistics, Draft Statistical Capability Framework  
(<http://www.abs.gov.au/websitedbs/a3121120.nsf/home/ABS+Statistical+Capability+Framework>)



## Statistical Capability Framework – Tier 2

### Statistical Use

- **Discovering & Assessing** → finding sources of information and determining whether that information can appropriately inform your analysis

#### AUDIENCES' CURRENT SOURCES OF INFORMATION

Knowing where the audience get information about the subject helps to:

- determine what channels can be used to reach the audience; and
- find out what other types of information the audience is using.



Source: Australian Bureau of Statistics, Draft Statistical Capability Framework  
(<http://www.abs.gov.au/websitedbs/a3121120.nsf/home/ABS+Statistical+Capability+Framework>) and  
FAO e-learning <http://www.fao.org/elearning/#/elc/en/course/FCOM>



# Statistical Capability Framework – Tier 2

## AUDIENCES' CURRENT SOURCES OF INFORMATION

Example: analysis of information sources

Name of audience: Pastoralists (project beneficiaries)		
Information sources	Question	Findings
	Where do they currently get information? What media do they use?	Informal exchange via clan leaders. Discussions at watering points and markets. No print or broadcast media. Some use mobile phones in towns. NGOs provide training. Some children attend school.

Source: FAO e-learning <http://www.fao.org/elearning/#/elc/en/course/FCOM>

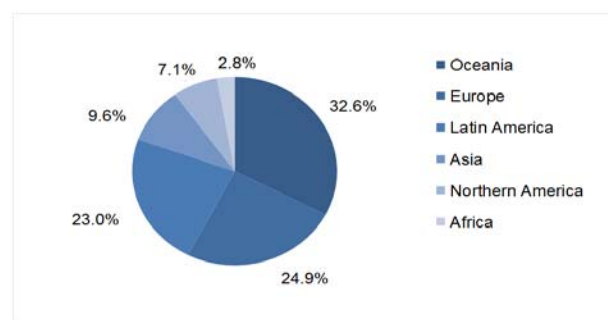


# Statistical Capability Framework – Tier 2

## Statistical Use

- **Analysing and Interpreting** → using appropriate techniques to find key messages in the data

Distribution of organic agricultural land by region 2009



FIBL [www.fibl.org](http://www.fibl.org)

Source: FIBL & IFOAM Survey 2010



Source: Australian Bureau of Statistics, Draft Statistical Capability Framework  
(<http://www.abs.gov.au/websitedbs/a3121120.nsf/home/ABS+Statistical+Capability+Framework>)

Source: <http://www.organic-world.net/yearbook/yearbook-2011/yearbook-2011-graphs.html>





## Statistical Capability Framework – Tier 2

### Statistical Use

- **Communicating** → presenting the key messages you have found in the data in a clear and accurate manner



Think of the **basic messages** you want to convey...

- messages should **address the audience's interests and attract their attention**; and
- basic messages should be kept **simple**.

Source: Australian Bureau of Statistics, Draft Statistical Capability Framework (<http://www.abs.gov.au/websitedbs/a3121120.nsf/home/ABS+Statistical+Capability+Framework>) and FAO e-learning <http://www.fao.org/elearning/#/elc/en/course/FCOM>



## Statistical Capability Framework – Tier 2

### Statistical Use

- **Applying** → using the statistical information to inform the outcome of the research and/or policy need



#### Example:

A **policy brief** is a concise summary of a particular issue, the policy options to deal with it, and some recommendations on the best option.

Based on firm evidence

Source: Australian Bureau of Statistics, Draft Statistical Capability Framework (<http://www.abs.gov.au/websitedbs/a3121120.nsf/home/ABS+Statistical+Capability+Framework>) and FAO e-learning <http://www.fao.org/elearning/#/elc/en/course/FCOM>



## Statistical Capability Framework – Tier 2

### Statistical Production

- **Specifying** → articulating the research and/or policy need; scoping what information is required; how the necessary data will be obtained and/or collected.
- **Designing and Building** → designing and building the statistical methodologies, IT systems, and business processes
- **Acquiring and Processing** → obtaining and/or acquiring the relevant data and applying all processing requirements
- **Validating and Disseminating** → preparing the data outputs for publishing
- **Evaluating** → undertaking an evaluation of the end-to-end statistical production process

Source: Australian Bureau of Statistics, Draft Statistical Capability Framework  
(<http://www.abs.gov.au/websitedbs/a3121120.nsf/home/ABS+Statistical+Capability+Framework>)



## Statistical Capability Framework – Tier 2

### Statistical Leadership

- **Positioning** → ensuring the ongoing relevance of statistical information
- **Influencing** → shaping the national and international environment in which statistical information and assets are valued
- **Enabling** → ensuring the appropriate foundations (including capabilities) and infrastructure are in place

Source: Australian Bureau of Statistics, Draft Statistical Capability Framework  
(<http://www.abs.gov.au/websitedbs/a3121120.nsf/home/ABS+Statistical+Capability+Framework>)





## Statistical Capability Framework – Tier 3

### Statistical Use



## Statistical Capability Framework – Tier 3

Statistical Use	
Discovering & Assessing	Clearly articulate the aim and purpose of the research and/or policy need
	Formulate research questions
	Locate relevant information sources and assess their ability to be linked and/or integrated.
	Assess the quality of available data sources
	Compare quality attributes for different data sources
	Negotiate access to administrative or transactional data sources



## Statistical Capability Framework – Tier 3

Statistical Use	
Analysing and Interpreting	Understand and apply appropriate techniques to link, integrate or extract relevant information from data sources
	Identify the main contributors, relationships, and trends in data
	Transform data into tabular or graphical format
	Reach a conclusion or prediction based on the extracted information
	Understand any relevant statistical models and frameworks used to produce statistical information (e.g. System of National Accounts, Price Indexes, System of Environmental-Economic Accounting, etc.)

Source: Australian Bureau of Statistics, Draft Statistical Capability Framework  
<http://www.abs.gov.au/websitedbs/a3121120.nsf/home/ABS+Statistical+Capability+Framework>



## Statistical Capability Framework – Tier 3

Statistical Use	
Communicating	Describe key information in both written and visual format
	Relate key messages to the research and/or policy issue
	Apply statistical reasoning to support your conclusions/decisions
	Describe any data linking or integration that has been undertaken
	Clearly articulate the limits of the data due to quality implications
	Communicate complex concepts and technical issues using easy to understand language

Source: Australian Bureau of Statistics, Draft Statistical Capability Framework  
<http://www.abs.gov.au/websitedbs/a3121120.nsf/home/ABS+Statistical+Capability+Framework>



## Statistical Capability Framework – Tier 3

Statistical Use	
Applying	Develop risk mitigation strategies based on data gaps, or quality issues identified in the analysis
	Communicate the decision to be made and/or recommendations to be implemented, including the relevant statistical justification

Source: Australian Bureau of Statistics, Draft Statistical Capability Framework  
(<http://www.abs.gov.au/websitedbs/a3121120.nsf/home/ABS+Statistical+Capability+Framework>)



## Statistical Capability Framework – Tier 3 Statistical Production



## Statistical Capability Framework – Tier 3

### Statistical Production

<b>Specifying</b>	Engage and partner with relevant stakeholders
	Negotiate access to administrative or transactional data sources
	Conduct quality assessments on datasets derived from administrative sources
	Determine if a statistical project is necessary and feasible
	Identify and understand any relevant statistical models and frameworks required for production of information (e.g. System of National Accounts, Price Indexes, System of Environmental-Economic Accounting, etc.)
	Develop a collection strategy, prioritise content, establish methodological and quality parameters, and agree on a dissemination strategy
	Apply knowledge and understanding of statistical business processes, methodologies, and technologies
	Identify potential quality issues and articulate any impacts on the collection process

Source: Australian Bureau of Statistics, Draft Statistical Capability Framework  
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## Statistical Capability Framework – Tier 3

### Statistical Production

<b>Designing and Building</b>	Understand the relevant methodologies and processes required to:
	<ul style="list-style-type: none"> <li>Develop a sampling strategy</li> <li>Design and build collection content</li> <li>Design, build, and test a collection instrument</li> <li>Develop an editing strategy</li> <li>Develop an imputation strategy</li> <li>Develop a data quality strategy</li> <li>Define and document relevant metadata</li> <li>Design and test training materials and instructions for the statistical collection</li> <li>Build and test statistical processing systems</li> </ul>

Source: Australian Bureau of Statistics, Draft Statistical Capability Framework  
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## Statistical Capability Framework – Tier 3

### Statistical Production

Acquiring and Processing	Initiate contact with providers and obtain access to, or collect data using relevant methods
	Document and assess all metadata
	Extract datasets and apply appropriate data pre-processing tasks
	Apply micro- and macro-editing techniques to data
	Identify and resolve inconsistencies between datasets before linkage/integration
	Match and clean administrative data records
	Apply relevant statistical models where necessary to obtain standard outputs
	Derive new data items from existing variables
	Apply weighting criteria to sample data to create estimates for the target population

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## Statistical Capability Framework – Tier 3

### Statistical Production

Validating and Disseminating	Identify key issues in the data and dissect or isolate its components to investigate further
	Apply analytical techniques to view data from a range of perspectives and/or detect and test relationships between variables
	Understand and explain movements in key variables over time and between different subgroups
	Confront key statistics with other data sources and explain any differences
	Understand and articulate any associated data limitations (i.e. sampling and non-sampling errors, data gaps)
	Create summary indicators to communicate the statistical stories present in the data
	Produce standard outputs informed by any relevant statistical models used
	Transform output datasets, commentary, and statistics into dissemination formats

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## Statistical Capability Framework – Tier 3

### Statistical Production

<b>Evaluating</b>	<b>Use relevant metadata to support the evaluation of systems, processes, and procedures</b>
	<b>Identify key statistical issues in the collection process and potential impacts on data quality</b>
	<b>Assess the business processes of administrative data producers and identify steps in the collection and/or processing stages where data quality can be improved</b>
	<b>Test new or updated processes and systems to identify and resolve potential quality issues</b>

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## Statistical Capability Framework – Tier 3 Statistical Leadership



## Statistical Capability Framework – Tier 3

### Statistical Leadership

<b>Positioning</b>	<b>Undertake environment scanning to understand the broader research and/or policy context, and utilise this understanding to set and review relevant statistical programs with key national and international stakeholders</b>
	<b>Apply economic, environment, or social knowledge to manage, implement, and innovate within the statistical process to support improved research and/or policy decisions</b>
	<b>Conduct statistical work aligned to the Fundamental Principles of Official Statistics (set out by the United Nations)</b>

Source: Australian Bureau of Statistics, Draft Statistical Capability Framework  
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## Statistical Capability Framework – Tier 3

### Statistical Leadership

<b>Influencing</b>	<b>Establish, maintain and leverage good working relationships with key stakeholders in relevant fields</b>
	<b>Contribute to the development of national and international statistical standards, classifications, frameworks, and protocols, and promulgate their use within the wider community</b>
	<b>Champion data access and facilitate data sharing across relevant statistical and non-statistical government agencies and organisations</b>
	<b>Negotiate agreements on the provision of data (including administrative data) and technical services to agreed timetables and budgets</b>
	<b>Assist data custodians to improve data quality at the source by improving metadata standards and implementing relevant classifications to increase coherency</b>
	<b>Lead and connect with networks, seminars, and groups of experts across the national and international domain to ensure consistency, coordination and collaboration of activities</b>

Source: Australian Bureau of Statistics, Draft Statistical Capability Framework  
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## Statistical Capability Framework – Tier 3

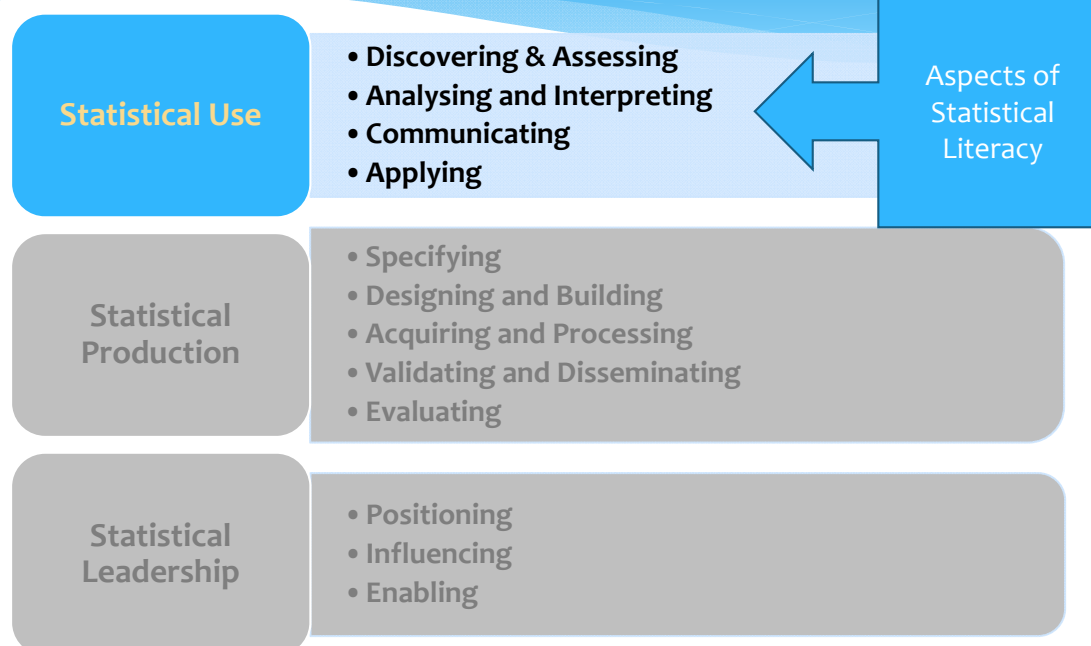
### Statistical Leadership

Enabling	Develop and leverage relevant networks
	Build the statistical understanding and knowledge of data custodians
	Assess and actively develop the statistical capability of users and producers of statistics and facilitate the development of necessary learning resources
	Ensure stakeholders know what data is available, understand relevant statistical concepts and simple statistical analyses, and can communicate statistical information effectively
	Facilitate the delivery of important national and international statistics to users along with related information to help them understand and apply the data effectively

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## Statistical Capability Framework – Tier 2



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Thank You!

