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COMMUNITY ATTITUDES TO THE USE AND MANAGEMENT OF BIOSOLIDS

2020 COMMUNITY PUBLIC REPORT

PREPARED FOR AUSTRALIAN AND NEW
ZEALAND BIOSOLIDS PARTNERSHIP

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In preparing this report we have presented and interpreted information that we believe to be relevant for completing the agreed task in a professional manner. It is important to understand that we have sought to ensure the accuracy of all the information incorporated into this report.

Where we have made assumptions as a part of interpreting the data in this report, we have sought to make those assumptions clear. Similarly, we have sought to make clear where we are expressing our professional opinion rather than reporting findings. Please ensure that you take these assumptions into account when using this report as the basis for any decision-making.

The base (number and type of participants asked each question) and the actual survey questions are shown at the bottom of each page. Results may not always total 100% due to rounding.

This project was conducted in accordance with AS: ISO20252:2012 guidelines, to which Newgate Research is accredited. Project reference number: NGR 1906009

The images of all individuals included in the report are stock images.



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EXECUTIVE SUMMARY



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EXECUTIVE SUMMARY

METHODOLOGY AND APPROACH IN OVERVIEW

This report details the findings from a quantitative survey conducted with a sample of n=1,225 adults across Australia (n=1,029) and NZ (n=226) during May 2020.

The objective of this research was to understand community awareness and perceptions of biosolids, building on the findings from a previous study conducted in 2010.

Biosolids are defined in this study as the treated by-products of wastewater treatment, which can be applied to land or used as fuel for power generation).

The survey was conducted with the general population, and also more specifically with people who had closer proximity to biosolids e.g. those living near a wastewater treatment plant (WWTP) or near farmland (biosolids neighbours).

Findings were generally similar between Australia and NZ, and between the general community and biosolids neighbours. Where significant differences exist, they have been noted within this report.

KEY STATISTICS

- ◆ **Biosolids are not top of mind as an example of waste re-use or recycling: 1%** mention 'use of sewage/wastewater for fertiliser' when we ask what comes to mind in relation to the re-use of waste products.
- ◆ **There is reasonable awareness that biosolid products are produced by Wastewater Treatment Plants: 31%** are aware of this after prompting with 'Wastewater Treatment Plants treat the wastewater to produce useful by-products'.
- ◆ **There is fairly good awareness of the term 'biosolids': 45%** have heard this term before when prompted with it, up from 33% in 2010. Males, those in Aboriginal and Torres Strait Islander communities and older (65+) participants have the highest awareness levels.
- ◆ **There is reasonable knowledge of biosolids: 37%** of participants are able to describe some aspect of what they are when prompted with the name.
- ◆ **However, few feel they know a lot about them: 20%** have at least a little knowledge, and just 3% say they know a lot.
- ◆ **Some claim to be using biosolids: 4%** of participants say they are using biosolids in their gardening/farming activities.

EXECUTIVE SUMMARY (CONT'D)

ACCEPTABILITY OF DIFFERENT BIOSOLIDS USES

- ◆ **Most acceptable uses:** Use on **non-agricultural land, and for fuel and energy** are considered completely acceptable by almost half (and over 70% found each of these uses acceptable to some degree);
- ◆ **Next most acceptable were:** Use on **gardens, in commercial fertiliser, in commercial landscaping, as road fill and on-farm land application** are considered completely acceptable by around 40% (with two-thirds finding each use acceptable to some degree); and
- ◆ Use in soil used to grow **tree-nuts, cooking oils and beer, as well as use in building materials** were next. Around 30% find each of these uses completely acceptable (with between 50 and 60% of people finding each use acceptable to some degree).
- ◆ However, fewer than one-in-ten find any of the potential uses tested unacceptable.

ACCEPTABILITY OF DIFFERENT BIOSOLIDS FORMATS FOR USE IN FOOD CROPS

- ◆ **Between 30% and 40% of participants** find all of the formats tested to be completely acceptable to grow food with.
- ◆ Acceptability is highest for biosolids as an **ingredient in compost** (either with green waste or vermicomposted).
- ◆ **Fewer than 8% of participants find any of these formats unacceptable.**

BACKGROUND AND SAMPLE



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BACKGROUND

Biosolids are the major byproduct of the wastewater treatment process and are being increasingly used for a range of purposes including crop and pasture improvement, landscaping, land rehabilitation, road base, oil and fuel.

Production and use of biosolids is highly regulated in Australia, and guidelines around their treatment and use exist in NZ.

The Australian & New Zealand Biosolids Partnership (ANZBP), a member-based collaboration of utilities, consultants, academics and government bodies, is committed to the sustainable management of biosolids.

In 2010, the ANZBP commissioned a program of research to explore and establish stakeholder and community knowledge and attitudes towards biosolids and to develop a suite of benchmark metrics around community awareness and sentiment that could be tracked over time.

In 2020 a second research project was conducted to update this understanding.

The results of the community research is contained in this report.



METHODOLOGY

- ◆ A quantitative survey with a representative cross-section of the general public in Australia and New Zealand. The survey was completed by a total sample of n=1,225 people, comprising n=1,029 in Australia and n=226 in NZ.
- ◆ The research was conducted between 15th May and 1st June 2020. A mix of online and computer-assisted telephone interviewing (CATI) was used, with CATI employed to help to reach those who live in specific postcode locations (i.e. near sites where biosolids are either being produced or potentially used). The online survey length was 15 minutes and the CATI survey length was 20 minutes (with a small number of questions omitted for the CATI).
- ◆ Quotas were set on location, age and gender to represent a broad cross-section of opinion in line with key population statistics in each country. Data was weighted back to latest population statistics (the Australian Bureau of Statistics 2016 Census and the 2018 New Zealand Census) to correct for any over or under-sampling.
- ◆ Additional quotas were set to achieve a mix of people living close to areas where biosolids are being produced and potentially used (**Neighbours**), and those who do not (**General Community**).
 - Neighbours either lived within a specific postcode area identified by ANZBP or Newgate Research as being within 10km of a wastewater treatment plant, and/or stated in the survey that they lived close to farmland.
- ◆ This approach broadly aligns with 2010 study, apart from:
 - A change in terminology - 'Biosolids Neighbours' were named 'Affected Communities' in the 2010 report.
 - A higher proportion of interviews was conducted online in 2020. This is due to significant shifts in technology and online panel participation since 2010.
 - More sample controls were applied to 2020 data, such as weighting, to optimise locational representativeness.
- ◆ The sample size of n=1,225 means that the overall results contained within this survey have a margin of error of +/-2.8% at the 95% confidence level. A margin of error tells you by how many percentage points your results may differ from the real population value. For example, a 95% confidence interval with a 2 percent margin of error means that your statistic will be within 2 percentage points of the real population value 95% of the time.
- ◆ It is worthwhile to note that this research was conducted during the coronavirus pandemic. The decision was made to proceed with the research in order to provide the required ten-year market snapshot of public sentiment and with the recognition that public attitudes may have permanently changed from the pre-pandemic baseline. It is possible that the pandemic may have served to heighten concerns around the use of biosolids in food production.

SAMPLE

- ♦ The sample has been designed to optimise sample representativeness and achieve broad comparability between waves

		2010	2020	Latest population statistics
AUSTRALIA	TOTAL	<i>n=1,020</i>	<i>n=1,029</i>	
	NSW/ACT	25%	34%	34%
	Vic	21%	25%	26%
	Qld	22%	20%	20%
	WA	14%	10%	11%
	SA	14%	8%	7%
	NT/Tas	4%	3%	3%
	Metro	50%	72%	72%
	Regional	50%	28%	28%
	Indigenous**	2%	3%	3%
	Neighbours	50%	53%	-
	Male	49%	49%	49%
	Female	51%	51%	51%
	18-39	40%	39%	39%
	40-59	35%	35%	35%
	60+	25%	26%	26%
NEW ZEALAND	TOTAL	<i>n=201</i>	<i>n=226</i>	
	North Island	-	77%	76%
	South Island	-	24%	24%
	Iwi/Maori	13%	12%	16%
	Neighbours	50%	70%**	-
	Male	48%	48%	48%
	Female	52%	52%	52%
	18-39	44%	38%	38%
	40-59	34%	35%	35%
	60+	22%	28%	28%
TOTAL		n=1221	n=1,225	

** Please note where 'Indigenous' has been used within the report, it refers specifically to Aboriginal and Torres Strait Islander people in Australia.

***If we only include those who live close to wastewater treatment works (as last time) in NZ this proportion would be 53%. However, we feel it is of value to also include those who say they live close to farmland.

AWARENESS, KNOWLEDGE AND PERCEPTIONS OF BIOSOLIDS

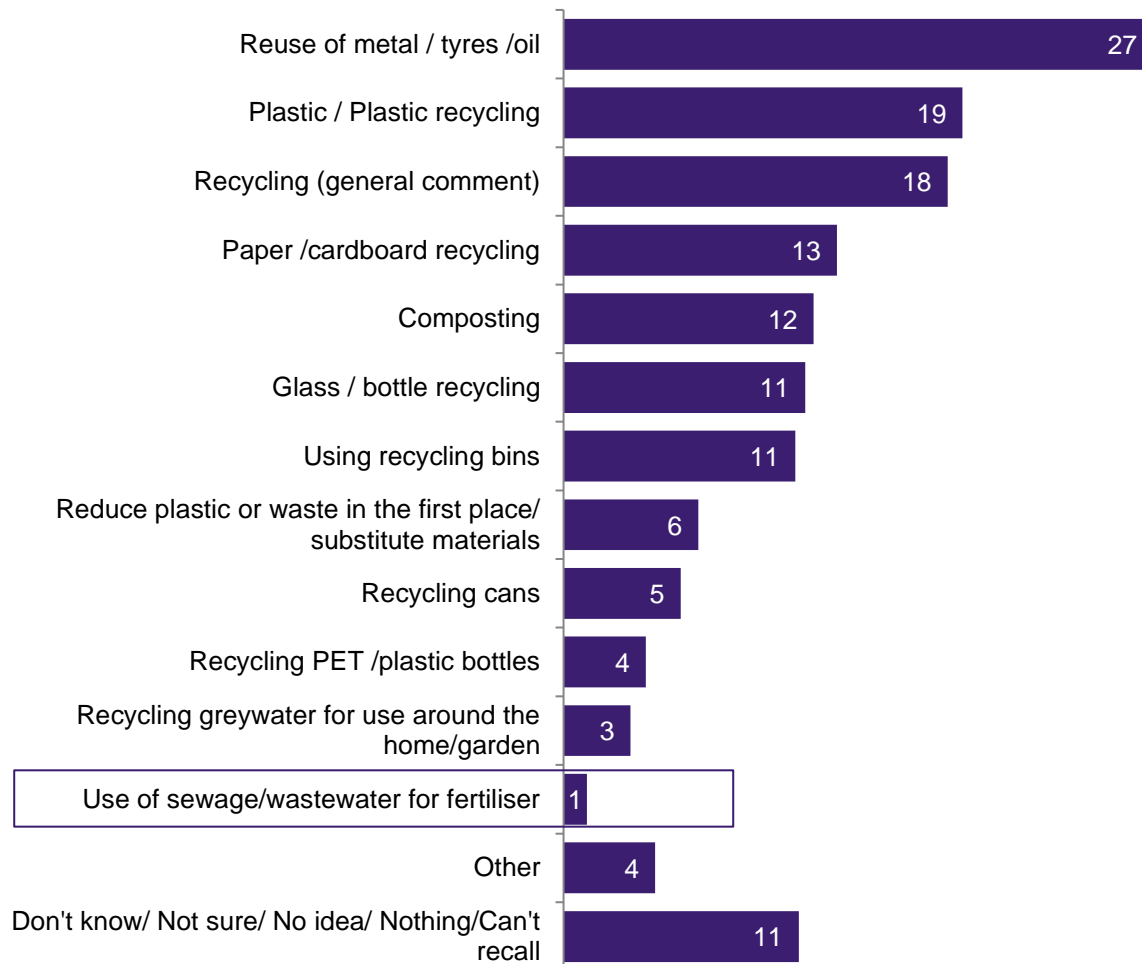


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TOP-OF-MIND WASTE PRODUCT REUSE/RECYCLING

Reuse of metal, tyres and oil and plastic recycling most commonly mentioned, with only 1-2% mentioning use of sewage or wastewater for fertiliser.

% Coded mentions



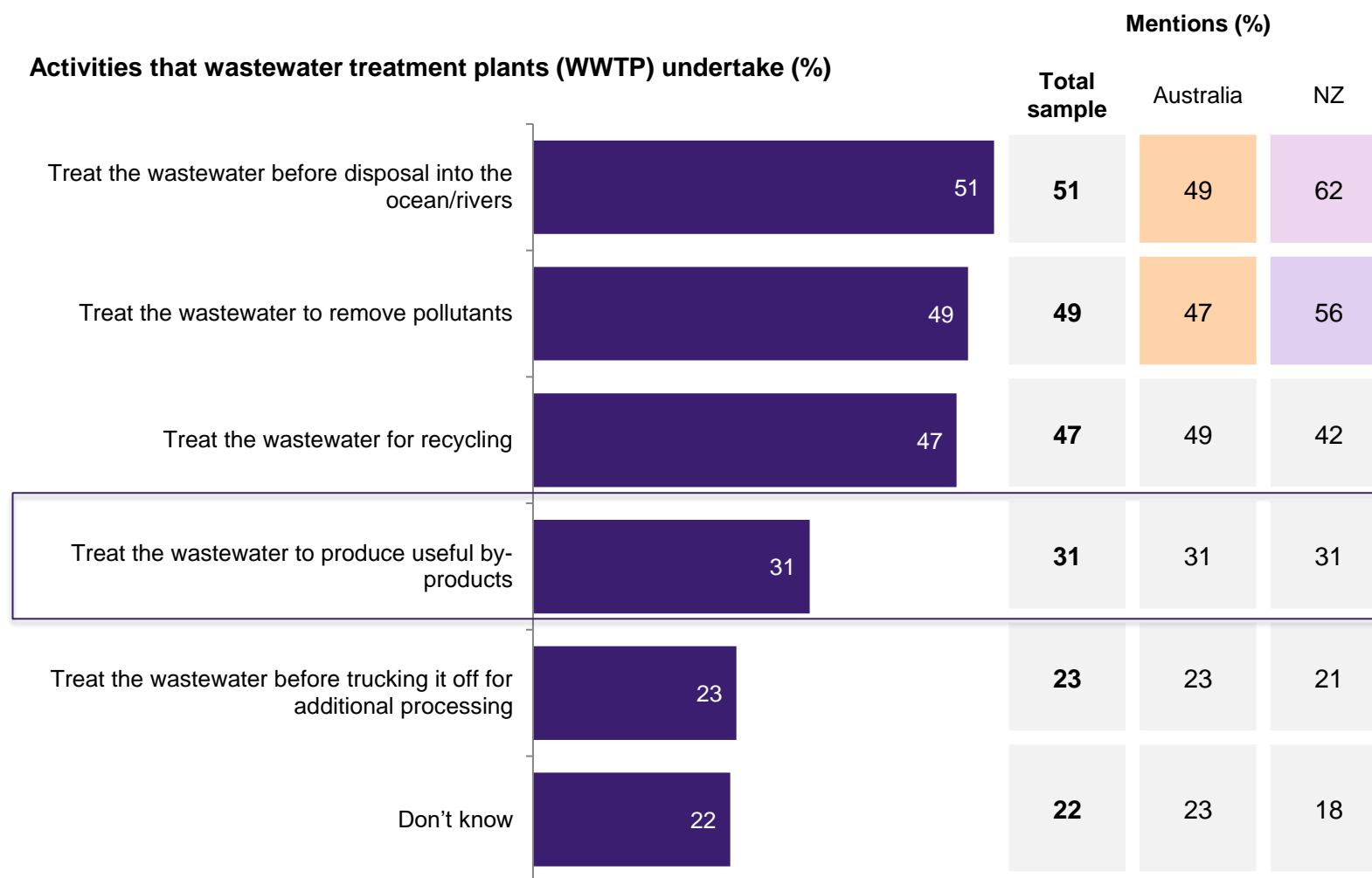
Mentions (%)

Total sample	Australia	NZ
27	26	35
19	18	19
18	16	26
13	13	11
12	11	15
11	11	12
11	11	7
6	6	9
5	6	3
4	4	3
3	3	1
1	1	2
4	4	5
11	12	4

Significantly higher/lower than other sub-group (@ 95% level of confidence)

AWARENESS OF BY-PRODUCTS PRODUCED BY WWTPS

One-third are aware of the production of useful by-products from wastewater, which is an increase on the 19% aware in 2010.



The proportion aware of WWTPs producing useful by-products has increased significantly from 19% in 2010 to 31% now.

Those most aware of biosolid production (useful by-products) are:

- Living in metro areas (33% vs. 25% not)
- Male (35% vs. 27% female)

No significant differences between Neighbours and the general community were seen beyond Neighbours being more aware of WWTPs treating water prior to disposal into oceans and rivers (54% vs. 48%).

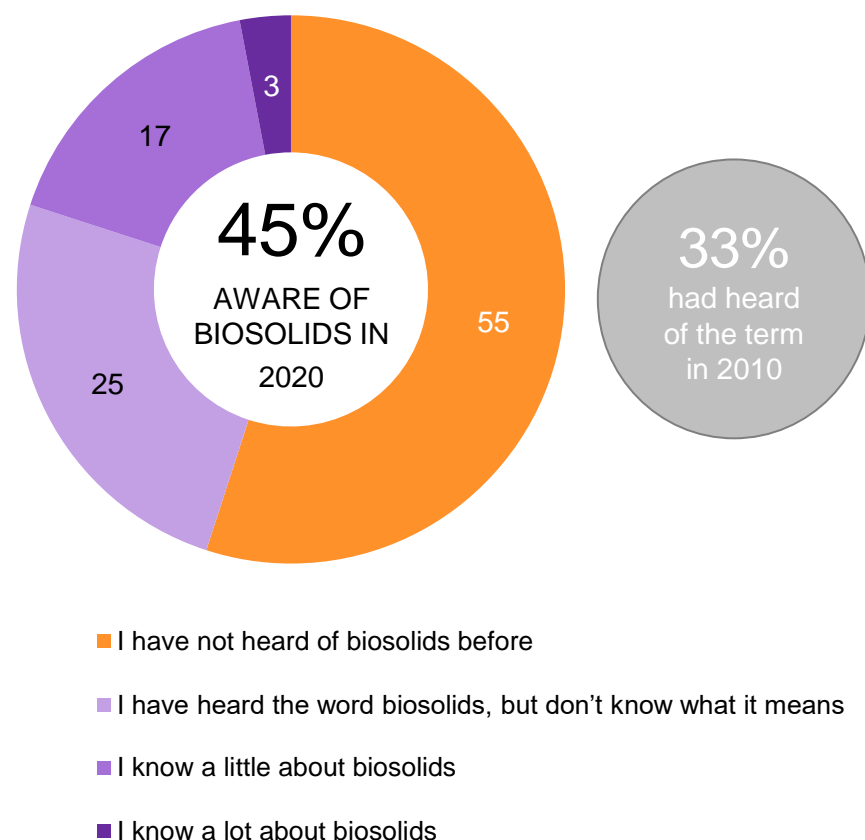
31% of participants say they are aware of a wastewater plant in their local area, and a further 18% are not sure. In 2010, 50% of participants said they were aware.

Significantly higher/lower than other sub-group (@ 95% level of confidence)

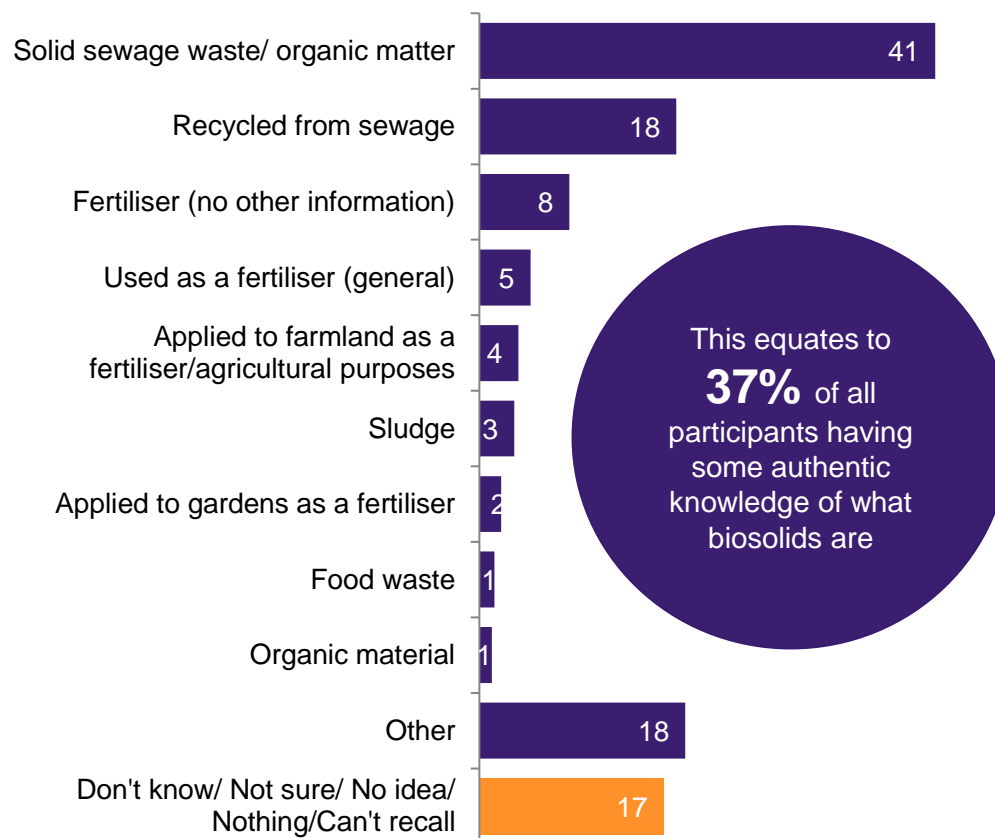
AWARENESS OF BIOSOLIDS WHEN PROMPTED BY THE NAME

The proportion of people aware of biosolids when prompted with the name is up significantly from 33% in 2010 to 45% in 2020, and roughly one-third have some authentic knowledge of what biosolids are.

Awareness and knowledge of biosolids when prompted by the name (%)



What those aware of biosolids say they know about them- % coded mentions



6% of gardeners/ farmers in the sample claim to be using biosolids on their land. This equates to 4% of the total sample.

HOW PEOPLE FEEL ABOUT BIOSOLIDS USE

Before seeing any further information beyond the name ‘biosolids’, over half of participants are unsure about whether biosolids should be used in either their country or their local area. Neighbours are more positive than the general community in NZ.



PARTICIPANTS WERE THEN SHOWN A DESCRIPTION OF BIOSOLIDS AND ASKED HOW THEY FELT NOW

DESCRIPTION SHOWN IN 2010

Biosolids are a by-product of sewage treatment. They contain nutrients and can be applied to agricultural land to grow cereals, grains and other crops. They can also be blended with composts for use on domestic gardens, used for landscaping or as fuel for power generation.

Biosolids may be quite liquid, or may be dried to produce a soil-like material. Following appropriate treatment, they are very safe; the risk of disease or environmental contamination is extremely low.

DESCRIPTION SHOWN IN 2020

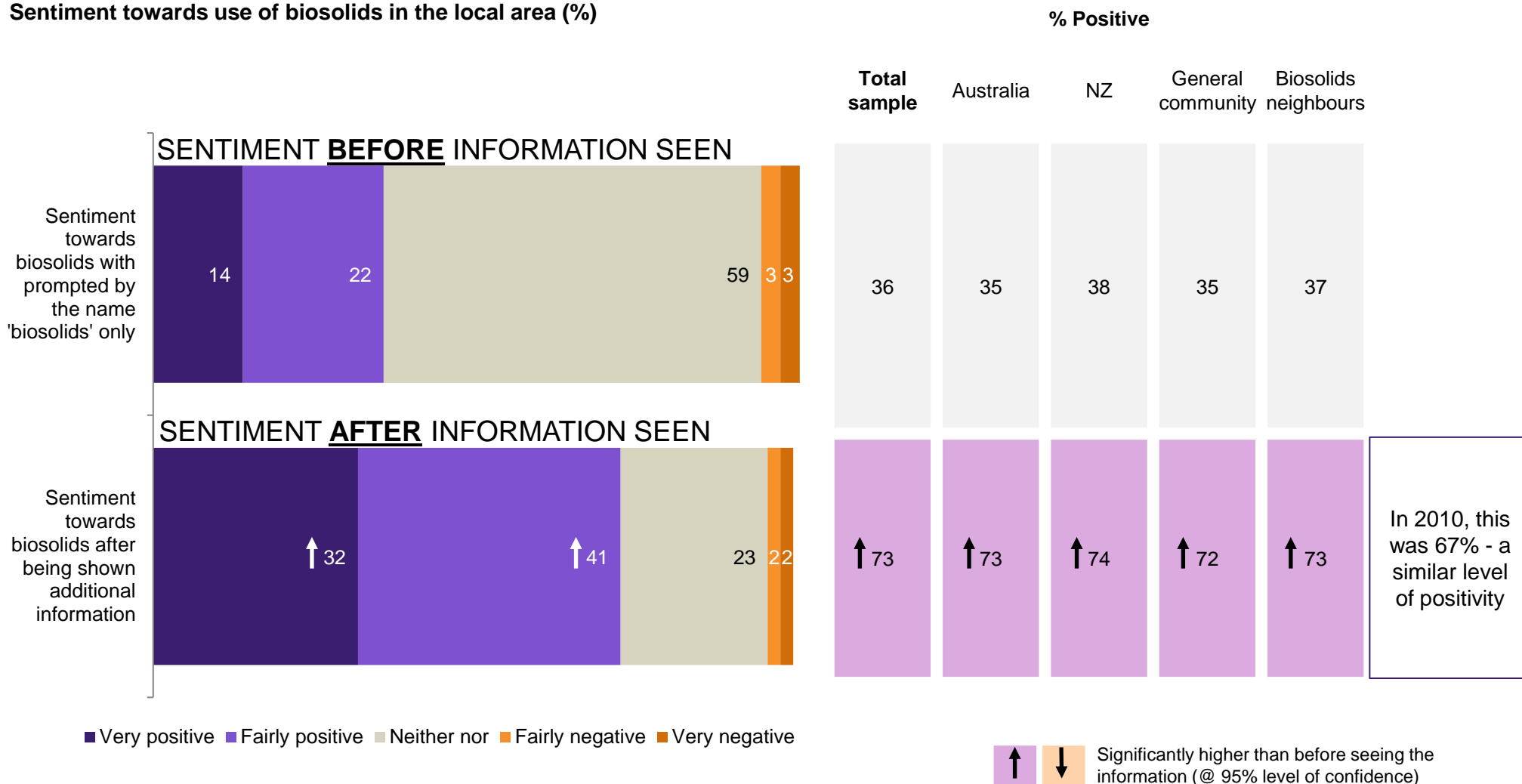
Biosolids are a solid by-product of wastewater treatment. They are good for soil fertilising and conditioning due to the nutrients and organic materials they contain. They can be applied to the land or used as fuel for power generation.

Biosolids can come in different forms. They may be quite liquid, or may be dried to produce a soil-like material known as 'cake'. Strict quality standards and guidelines in biosolids treatment processes make them extremely safe. The risk of disease via pathogens or environmental contamination is extremely low.

HOW PEOPLE FEEL AFTER SEEING MORE INFORMATION

When a description is shown, positivity towards biosolids increases significantly (doubling), while the proportion who are negative remains at a similar level. In other words, more information is a good thing.

Sentiment towards use of biosolids in the local area (%)

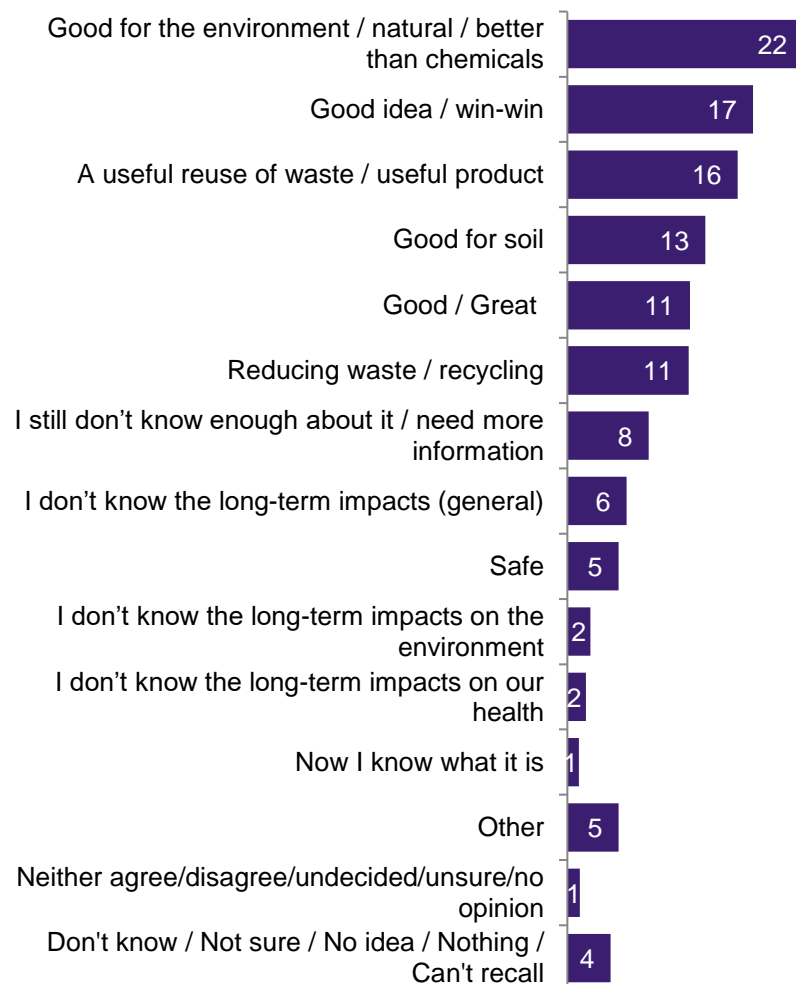


REASONS FOR SENTIMENT TOWARDS BIOSOLIDS

Benefits to the environment (more natural than alternatives), beneficial reuse, soil improvement and reducing waste are key reasons given for positive perceptions. Lack of information, safety concerns and lack of knowledge about long term impacts are key reasons given by those who are negative or neutral.

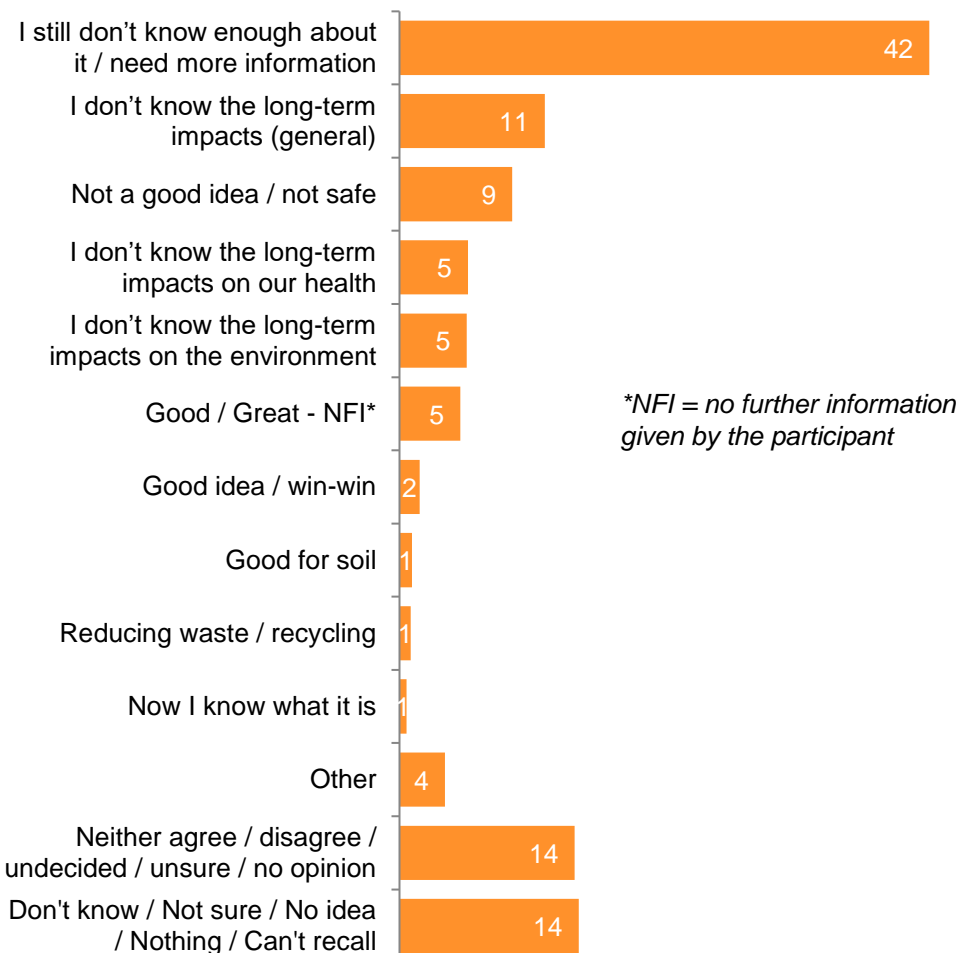
ALL WHO ARE POSITIVE

% coded mentions – all who are positive



ALL WHO ARE NEGATIVE OR NEUTRAL

% coded mentions – all who are neutral or negative



*NFI = no further information given by the participant

AWARENESS AND KNOWLEDGE OF BIOSOLIDS: 2010 VS 2020

Awareness, understanding and positivity towards biosolids have all increased overall since 2010.

2010	2020
<p><i>The 2010 survey found that:</i></p> <ul style="list-style-type: none">◆ Overall, 33% of participants had heard of the term ‘biosolids’.◆ Less than a quarter (22%) of the general community had heard of ‘biosolids’ before, while 45% of the ‘affected’ community was aware of the term ‘biosolids’.◆ Those who had heard of biosolids before most commonly defined it as “broken down; recycled or treated waste” (40%) or “it is or can be used like a fertiliser” (10%)◆ A fifth (19%) who had heard of the term didn’t know what biosolids are.◆ After being shown a definition of what biosolids are, around two-thirds (67%) expressed feeling positive towards biosolids.	<p><i>Our 2020 survey found that:</i></p> <ul style="list-style-type: none">◆ Overall awareness of biosolids is now 45%, up 12% from 2010.◆ The difference in awareness levels between Biosolids Neighbours and the general community has evened out (45% awareness for general community, and 46% awareness for Biosolids Neighbours) – but this may be due to the broader classification of Neighbours in 2020.◆ Understanding of the definition of biosolids appears to have become more refined, with the top definition of biosolids being “solid sewage waste / organic matter” (41%), followed by “recycled from sewage” (18%).◆ However, the proportion of participants who have heard of biosolids but don’t know or can’t recall what it is remains roughly the same (17%).◆ Expressed positivity towards biosolids has increased, with almost three-quarters (73%) of participants feeling positive towards biosolids after seeing a definition.

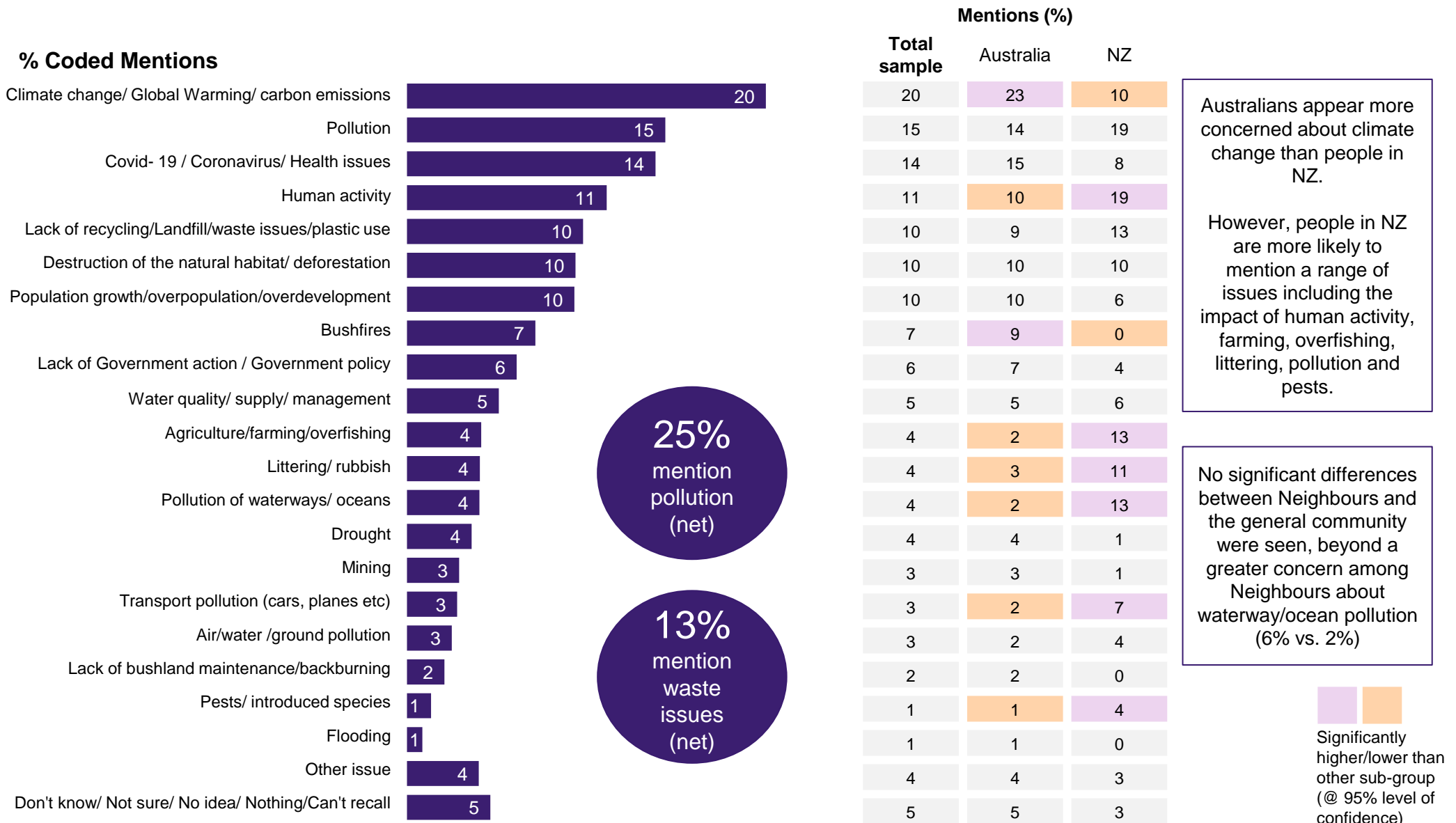
WHERE BIOSOLIDS FIT INTO THE BIGGER PICTURE



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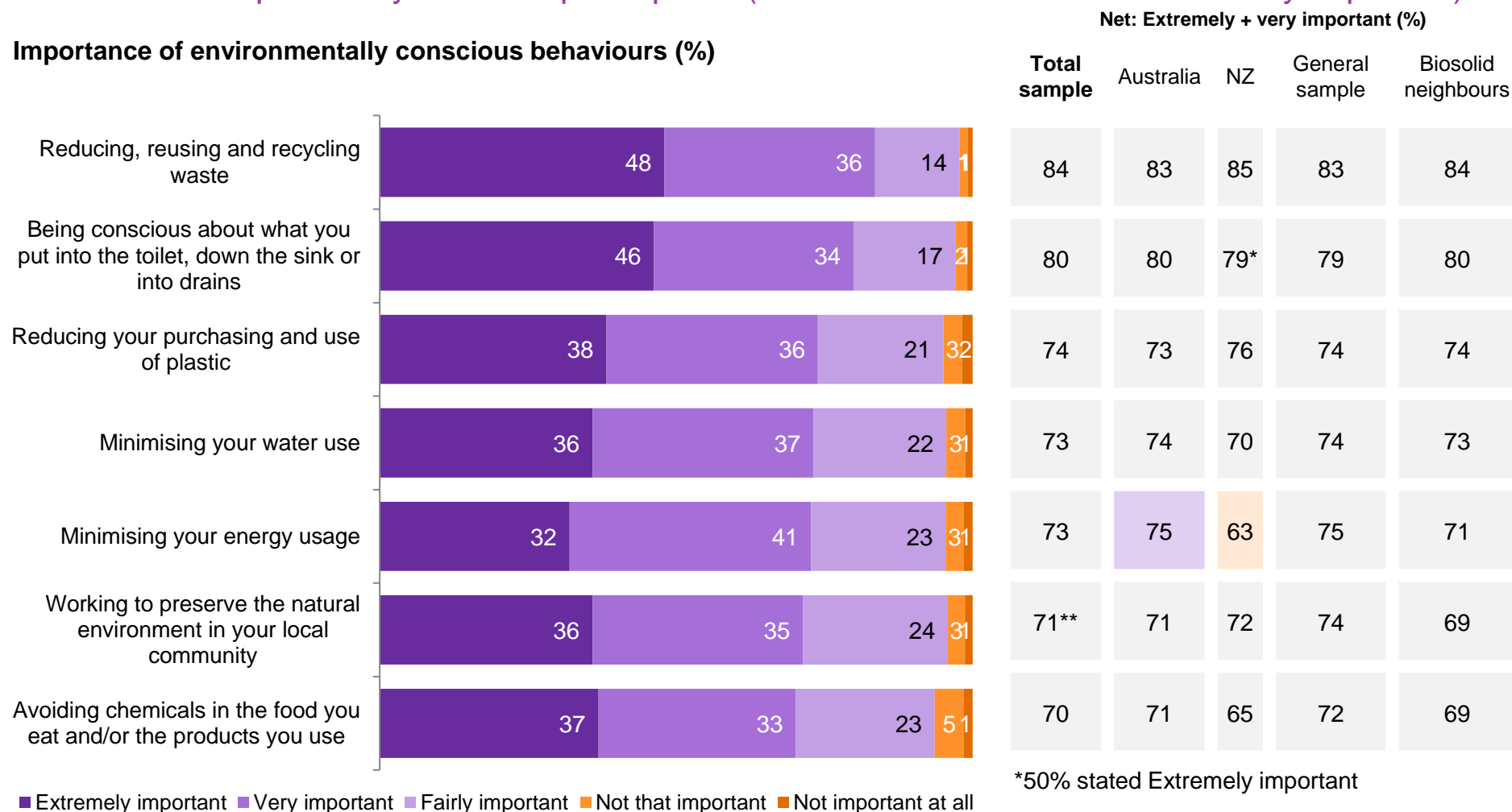
ENVIRONMENTAL ISSUES OF MOST CONCERN

When asked what they think are the biggest environmental issues facing Australia and New Zealand, climate change, pollution, pathogens, the impact of human activity, and lack of recycling emerge strongly.



IMPORTANCE OF ENVIRONMENTALLY CONSCIOUS BEHAVIOURS

Participants answering the online survey were also asked to rate the importance of a number of environmentally conscious behaviours. Recycling and being conscious about what goes into the sewers were rated as important by the most participants (almost half rated each as extremely important).



** In 2010, participants were asked how important the preservation of the natural environment in their local community was – 95% stated it was important. In 2020 we made this statement more of an action than a view held, which may explain the drop

Significantly higher/lower than other sub-group (@ 95% level of confidence)

SCOPE OF ACCEPTABLE BIOSOLIDS USES AND FORMATS

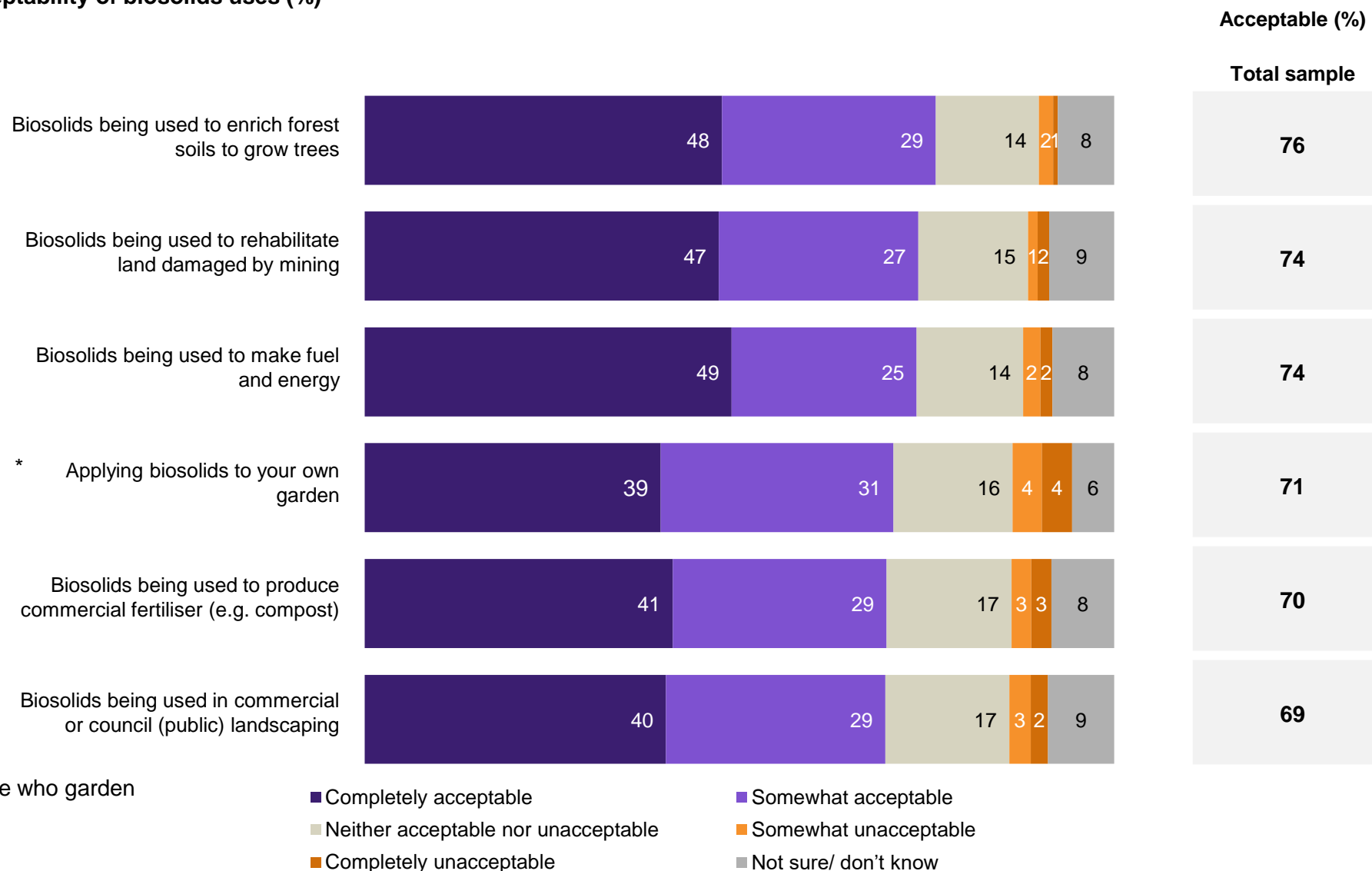


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ACCEPTABILITY OF DIFFERENT BIOSOLIDS USES – TOP MENTIONS

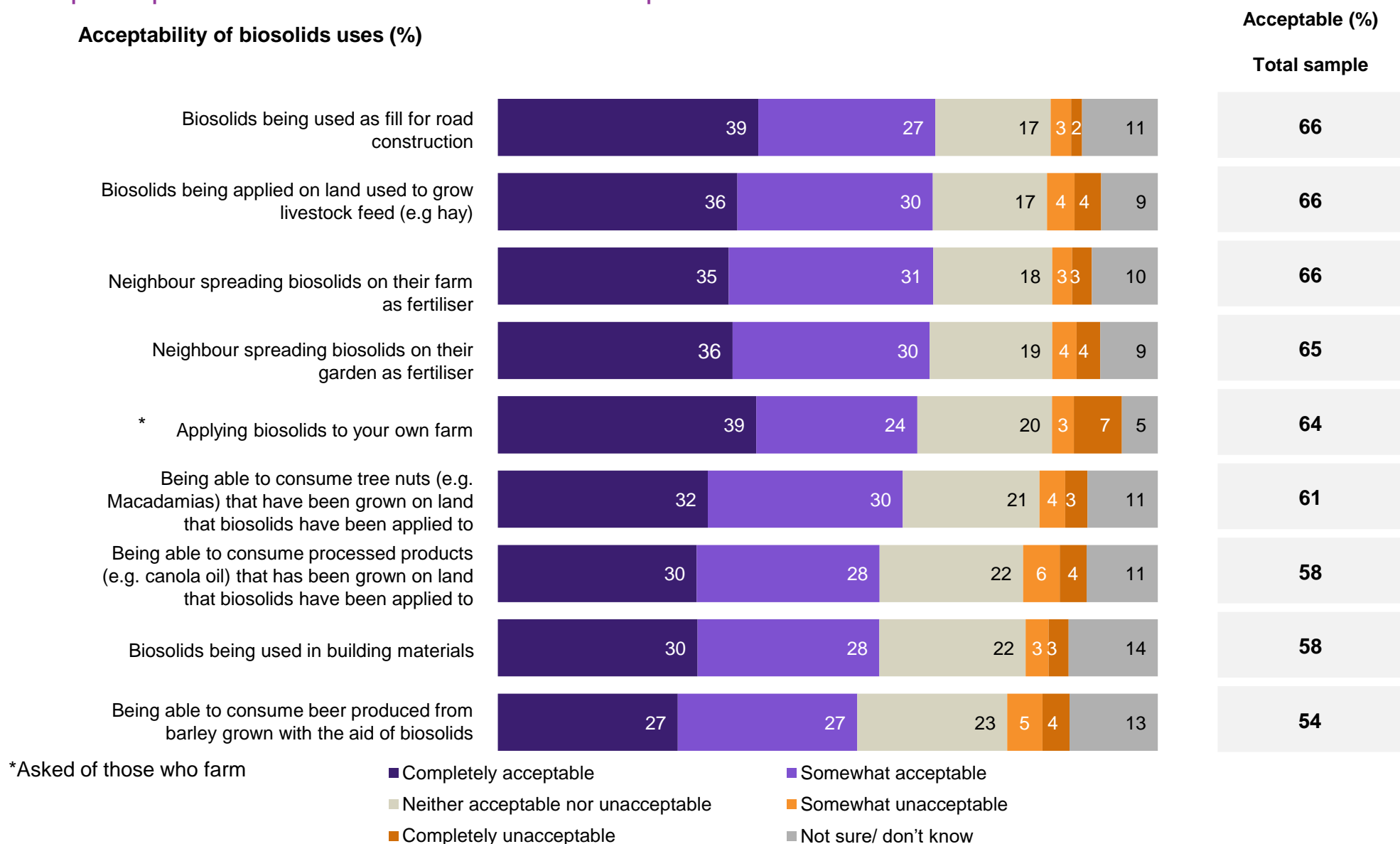
All potential uses explored in the survey are reasonably well supported (including those on the following page). Use in forestry, land rehabilitation and fuel/energy have the highest acceptability.

Acceptability of biosolids uses (%)



ACCEPTABILITY OF DIFFERENT BIOSOLIDS USES (CONT'D)

Participants are a little more mixed in their opinions of biosolids use to grow food – though over half of participants found each of these uses acceptable.



ACCEPTABILITY OF BIOSOLIDS USE: 2010 VS 2020

Levels of acceptability of biosolids uses for land application appear to have dropped very slightly from 2010, though the majority still consider this use acceptable.

2010	2020
<p><i>The 2010 survey found that:</i></p> <ul style="list-style-type: none">◆ Generally there was majority agreement and implied support for land application use of biosolids, including for growing food products (averaging around 78%)◆ Participants most agreed that it was appropriate to use biosolids:<ul style="list-style-type: none">○ To improve soil and encourage land growth on land damaged by mines (85%)○ As a fertiliser for forest soils to grow trees (85%)○ As a fertiliser for soil in which non-food products are grown (83%)◆ Around two-thirds said they would be likely to buy foods grown on ground where biosolids has been applied—e.g. grain food or products (67%) or dairy and meat products where livestock have grazed on land treated with biosolids (67%)	<p><i>Our 2020 survey found that:</i></p> <ul style="list-style-type: none">◆ Although there remains majority support for land application use of biosolids, levels of acceptability appear slightly lower*◆ Participants still see using biosolids as a fertiliser to enrich soil (76%) and to rehabilitate land damaged by mining (74%), as the most appropriate uses◆ Making fuel/energy is also seen as highly acceptable (74%)◆ Around two-thirds see various forms of biosolids being used to grow food products as acceptable, on par with findings from the 2010 survey.

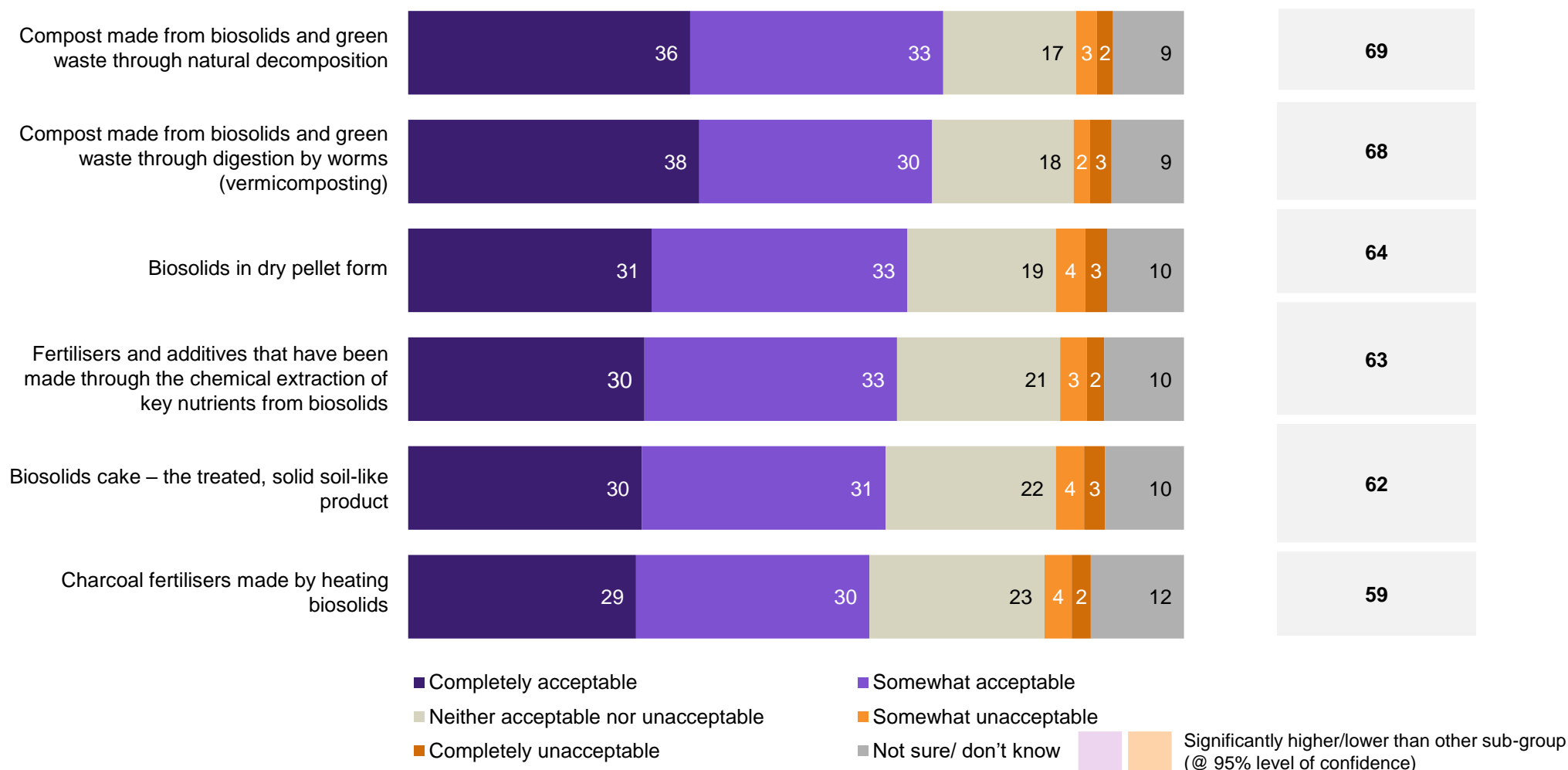
BIOSOLIDS FORMAT PREFERENCES FOR USE ON FOOD CROPS

All formats were acceptable to the majority of participants, with composts acceptable to the largest proportion. However, one-in-ten are unable to answer. Only online participants were asked this question.

Acceptability of food being grown in each biosolids format (%)

Acceptable (%)

Total sample



APPENDIX



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PARTICIPANT PROFILE

Gender	%	n
Male	49	583
Female	51	671
Other	0	1

Age	%	n
18-34	30	294
35-54	36	489
55+	34	472

Tenure at current location	%	n
Less than 6 months	0	0
6 months or longer	100	1,255

Demographic characteristics	%	n
I was born overseas	27	343
At least one of my parents was born overseas	46	563
I identify as Aboriginal	3	29
I identify as Torres Strait Islander	1	12
I identify as Kiwi or Maori	12	26
Have child(ren) aged 12 years or under living at home	24	305
Have child(ren) aged over 12 years old living at home	22	284

Educational attainment	%	n
Postgraduate degree	13	154
Graduate diploma / certificate	8	107
Bachelor's degree	24	290
Advanced diploma / diploma	10	239
Technical certificate	14	181
High school	30	366
Primary school	0	5
Other educational level	1	13

Is your occupation in farming? (Those who farm only)	%	n
Not personally involved in farming	39	23
Grow grain crops, like wheat and barley	14	9
Grow fruit and vegetables	23	15
Have a dairy herd	18	11
Have a beef herd	21	15
Have sheep	9	6
Another type of farming	11	8

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