



Appendix B:

AHC public communications paper

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1 Introduction

A key element of the NHS v1 relates to building community knowledge and engagement, where the governments agreed to:

- Develop a community education program to provide clear and accessible information about risks, benefits and safe use. The program will communicate the particular benefits hydrogen development can bring to regions as well as more general benefits such as economic growth, lower carbon emissions and reduced air pollution (action 5.1).
- Support best practice for community engagement and its use to build community awareness and ensure community engagement for large or significant projects (action 5.2).¹

The University of Queensland informed these agreements with a report written for the NHS called *Developing Community Trust in Hydrogen*.² This report concludes that there is no one-size-fits-all approach to community engagement for hydrogen, and it sets out some key considerations for future work in the area.

Since the release of the NHS the AHC undertook a multi-year social licence programme including developing the content for public communications about the emerging hydrogen industry and its impact on, and opportunities for, Australian consumers and communities. This content was produced with a view to manage the risk of inconsistent, confusing or inaccurate information creating a loss of confidence in the sector. It was intended that this work can be drawn on by governments and industry for their own communications.

This paper is based on work undertaken by the AHC in 2022 and has been recut for the 2023 AHC submission package for the revision of the NHS.

1.1 Community education and engagement

The need for community education and engagement for communicating about hydrogen arises for several reasons.

First, making and using hydrogen as a substitute for fossil fuels is a major undertaking. The public will need to understand the reason for this undertaking, including the energy transition and export context. There is a need for clarity on what is to come and what it means for people's way of life (how they use energy/fuel, regional changes and environmental changes). It is reasonable for the public to expect dialogue, consultation and engagement on these matters.

Second, community education and engagement can help government and industry to anticipate and resolve any concerns, and to learn what is and is not a good idea. Through growing relationships and trust locally and more broadly, it can help create advocates and opportunities and prevent mistakes being made by the industry.

¹ COAG Energy Council (2019), page12.

² Ashworth, Witt, Ferguson, Sehic (2019).

Third, it is responsible to teach people about specific uses for hydrogen. This is about the choices that are coming and empowering them to make those choices. It is also about safe handling of hydrogen.

1.2 Why we need a strategic approach

The emerging hydrogen industry will affect different regions and different markets in different timeframes, from now to beyond 2050. There are also diverse stakeholder groups, with different issues and concerns.

Ideally the industry will be supported by both communities and consumers, including businesses, with a welcome local presence and positive market perceptions. However, this is not a given, with social licence for hydrogen not guaranteed.

1.2.1 Supporting social licence in a complex and dynamic environment

The term ‘social licence’ is not well defined, but the usual understanding of it is as a social acceptance of an organisation or industry. This is generally a passive acceptance; social licence is not explicitly granted. In practice, discussions on social licence are about how to not lose it.

Organisations lose social licence where their activities have generated enough negative sentiment from their stakeholders that the organisation’s continued operation (at least in the area of concern) is called into question. These effects are most damaging where actual (legal) licences are revoked based on community concern. In 2019 it was estimated that community opposition had “contributed to the delay, cancellation or mothballing of more than \$20 billion of infrastructure projects in the last decade”.³

There are many ways to lose social licence, but the common element is that there was a stakeholder view that harm was done, which may mean a *perception* of harm. At its heart, maintaining/not losing social licence is about being *seen to do no harm*. We tend to talk about the need for social licence in relation to activities that might cause harm, whether this is harm to the environment, animals or people. We don’t talk about social licence for activities or entities considered to be harmless.

Social licence losses can be experienced in different ways across space and time. For example, a company with a poor safety record can lose reputation but regain it. It can lose its social licence and not affect the rest of the industry. Or an industry can lose social licence based on one or two cases (such as nuclear) and never regain it, or not regain it for decades. Or an industry can lose social licence over a much longer timeframe, such as the likely prospects for coal in the future.

Social licence for the hydrogen industry is a multifaceted topic, where we need to cover significant ground. For hydrogen production, this will be about localised perceptions of harm and benefit for communities hosting projects. For hydrogen use, there will be an array of touchpoints for consumers; hydrogen can be used in diverse ways and there are multiple potential markets. The good news is that the industry is starting from a position of neutral to positive community sentiment (see section 2.1.1).

³ Infrastructure Australia (2019), pages 15, 221.

It is worth noting that there is no one way to manage social licence. Given that it is a complicated concept related to external perceptions, even the notion of ‘managing’ social licence is fraught. Issues that may give rise to a loss of social licence are also too complex to manage in any holistic way; these matters are spread over many parties and subject to the luck (good and bad) and contingency of dynamic political environments.

For the sake of simplicity, the term ‘managing social licence’ will be used here to mean our collective efforts to support and protect the social licence of the emerging hydrogen industry. Industry players will themselves need to behave in ways that prevent and avoid harm (which is a matter for self- and state regulation), but collectively governments, industry and commentators can support *reputational risk management*, which is where communications play a role.

1.2.2 *The role of public communications*

The hydrogen sector is complex, and the communications associated with it will also be complex. However, in principle the public communications programme for hydrogen is simple; this is about meaningful stakeholder engagement, where stakeholders are listened to and understood, and communications are effective and transparent.

Much of the discussion on lost social licence to date relates to where public communications are seen to have failed on these matters, and examples of lost social licence are most prominent where local communities are affected. Such an example is Shell’s 2010 experience in Barendrecht, a town in the Netherlands. Shell intended to store CO₂ from its Pernis oil refinery in a depleted gas field under the town, and the logistics for the project looked good. However, the project was cancelled after local opposition for the project.

Researchers have examined the case, finding that the:

1. Content of communications were misaligned with audience need

- *Shell provided technical information that alienated/concerned the community.* In the initial sessions with stakeholders Shell was said to have provided information that was too technical, going so far as to highlight the exact locations of the gasfields under the town, which led to people checking where their house was on the map and becoming concerned if it was above the gasfields.⁴ In these same sessions, Shell was also not able to answer other important questions raised by local politicians.⁵
- *Communications did not discuss community benefits*, with the only benefits promoted being those for the project developers. Further, the project was not presented within the context of its benefit in responding to climate change, so broader benefits to society were also neglected in communications. Given the community members were concerned they would be exposed to risk from having the carbon dioxide stored under their homes, “the idea of having no benefits but high risks influenced the rejection of the project”.⁶

⁴ Feesntra, Mikunda, Brunsting (2010), page 17.

⁵ Ibid., page 15.

⁶ Ibid., page 27.

2. Communications timing lost trust

- *The community was informed too late.* Shell had provided its plans only when they were advanced, with key decisions already made. “The community was confronted with (maybe even overwhelmed by) the plans and felt little space for manoeuvre. They could not participate in the project or have their ideas or opinions incorporated. The community felt that the only possibility they had was to accept or reject the proposed plan. Due to the lack of participation and involvement in the process, they felt little need to accept a project with such a large (negative) local impact.”⁷
- *Approvals timing meant that government was not trusted.* Environmental approvals were only sought after the national government had allocated a grant to the project. This led stakeholders to believe that the government preferred the project go ahead, and that the environmental assessment “would not be a neutral and fair process”.⁸

3. Communications delivery created tension

- *Shell was seen as the main driver of the project for its own reasons.* The limited visibility of the national government at public meetings in the beginning of the process was considered to be key factor in subsequent debates. “Apart from a short presentation by a representative of the ministry ... during the first public meeting, only limited attention was given to the standpoint of the national government, the role of this project in a national context and related national policy. This created the feeling that the project was Shell’s idea. Reflecting on these meetings, an interviewee said that community irritation was raised and an atmosphere was created of Shell versus the public”.⁹
- *Public debates left no room to move.* Stakeholders largely engaged with one another in public, with little informal and/or direct contact between the two sides of the argument. This was said to be a problem because it was difficult for stakeholders to reconsider or nuance their earlier expressed positions.¹⁰ Further, both sides provided separate communications to the residents of Barendrecht, which amplified the standoff.

We can see from this example that Shell appears to have lost its social licence for the Barendrecht project because it did not communicate on the right topics to the right people at the right time, and that communications were not led by the right people or in the right fora. These are all matters that are addressed in this strategic framework.

1.2.3 Hydrogen interactions with other social licence issues

Context is everything in communications. The development of the hydrogen industry is an exercise in understanding the complexity of context and how existing issues can impact stakeholder views.

From a risk perspective, negative sentiment about hydrogen may be generated if it is perceived to negatively impact people (e.g. health, safety, income, lifestyle) and/or nature (e.g. health and safety

⁷ Ibid., page 27.

⁸ Ibid., page 27.

⁹ Ibid., page 15.

¹⁰ Ibid., page 29.

of animals and plants, land access, water access and quality, waste, cultural value, biodiversity). These concerns may be about how hydrogen is made, transported and used, which will then overlap with existing social licence concerns for similar or related industries.

Table 1 outlines some social licence issues from other industries that are relevant for the hydrogen industry.

Issue	Existing/past social licence issues	Relevance to hydrogen industry
Making hydrogen	<i>Electricity transmission infrastructure:</i> visual impacts, land access and use, ¹¹ health, biodiversity, bushfire risk and community compensation. ¹²	Highly relevant, and directly so where hydrogen producers focus on using grid electricity and so use transmission lines. Even if only minimally grid connected, the hydrogen industry could be caught up in negative sentiment if the coming renewables boom frustrates communities.
	<i>Solar farms:</i> land, ¹³ past developer behaviours, decommissioning and waste management.	Highly relevant, and directly so because solar will be a key input to renewable hydrogen production. The hydrogen industry could be caught up in negative sentiment if the coming renewables boom frustrates communities.
	<i>Wind farms:</i> onshore (land, noise, birdlife, visual impacts, past developer behaviours) and offshore (animals, birdlife, fishing, visual amenity); ¹⁴ also decommissioning ¹⁵ and waste management.	Highly relevant, and directly so because wind will be a key input to renewable hydrogen production. The hydrogen industry could be caught up in negative sentiment if the coming renewables boom frustrates communities.
	<i>CSG production:</i> land, ‘fracking’ and effects on water, including waste management, procedural fairness. ¹⁶	Relevant but indirectly so, because water is an input for renewable hydrogen production and CSG set a precedent for community opposition. ¹⁷ CSG was also an energy industry

¹¹ For example, following community concerns about the path of the study corridor for the NSW Central-West Orana REZ, transmission operator Transgrid (2021, page 11) has “supported the NSW Government to consider alternative options for part of the study corridor”, from the existing 500kV network to the Central-West Orana REZ.

¹² See Transgrid (2021), Davis (2021) and RE-Alliance (2021).

¹³ See Cosby and Howard (2020), page 19.

¹⁴ See Office of the Australian Energy Infrastructure Commissioner (2021), page 14.

¹⁵ The Office of the Australian Energy Infrastructure Commissioner (2021, page 27) notes that we are about to enter a period where, decommissioning activities will commence for some of the initial wind farm projects around Australia. The cost of decommissioning tends to lie with the landowner, although some projects will be covered by trust funds paid into by proponents (but typically starting at year 20 of a 25-year lease period). With the risks involved, decommissioning could be very expensive, and possibly “more than the total income generated for the landowner over the 25-year lease period”.

¹⁶ See Bond and Veitch (2020a), Luke (2017) also Moffat and Zhang (2014).

¹⁷ Bond and Veitch (2020a) say “if communities or consumers do decide to resist future fuel developments or products, they will be able to draw on symbolic and tactical resources developed through opposition with CSG. Networks, both online and offline, that emerged to counter CSG could be reactivated. And if consumers wanted to resist contractors entering their properties to convert pipes and appliances, they would have to look no further for a rallying cry than the ‘Lock the Gate’ signs that remain fixed to some suburban front gates to this day”, pages 95-96.

Issue	Existing/past social licence issues	Relevance to hydrogen industry
		matter (we can expect the same players), and in the same regions of the country.
	<i>Raw water use:</i> stakeholder concern about water allocation and the effectiveness of water markets. ¹⁸	Highly relevant, and directly so where projects use significant surface or groundwater for electrolysis.
	<i>Seawater use:</i> known issue of brine waste from desalination and effect on sea life, economic cost of desalination plants for communities.	Highly relevant, and directly so where projects treat significant amounts of seawater for electrolysis. Past opposition to existing or previous proposed desalination projects may resurface.
	<i>CCS/CCUS:</i> existing scepticism about fossil fuel interests and success rates, international concerns about land value (e.g. Barendrecht) ¹⁹ and safety.	Highly relevant, and directly so where hydrogen is made with CCS/CCUS. The hydrogen industry as a whole (that is, including renewable hydrogen) could also be caught up in negative sentiment.
	<i>Mining:</i> coal and iron ore for jobs, and hydrogen production.	Relevant, but indirectly so, because water is used in large quantities for mining operations. Additionally, if coal is used as feedstock for some forms of hydrogen, diminishing social licence for coal may transfer to hydrogen. Hydrogen is also seen as a threat to mining jobs and economic viability for some communities.
Export	<i>LNG export:</i> local economy boom and bust, lack of coordination for proponents, ²⁰ and domestic reserve policy.	Relevant, but indirectly so, as LNG was also an energy industry matter (we can expect the same players), and in the same regions of the country. Research has already found that people are concerned to ensure hydrogen is not exported at the cost of domestic use. ²¹ There will be a need to address water export as well.
	<i>Ports:</i> workforce concerns and consultation.	Past experience is relevant as it will affect community views of hydrogen as an export commodity.
Storage	<i>Hazardous goods:</i> e.g. 2020 Beirut port explosion from ammonium nitrate; CCS – see safety above.	Possibly relevant indirectly, but if ammonia continues to be considered the medium term vector for hydrogen this will be highly relevant.
End user experience	<i>Natural gas:</i> access to supply/contracts.	See domestic policy above.
	<i>Energy retail prices:</i> concerns about affordability and energy company price gouging for smaller consumers.	Highly relevant, particularly where hydrogen is the fuel sold. Also hydrogen's role in the energy transition, with potential gas and electricity price rises for infrastructure.

Table 1: Social licence matters connected to the future hydrogen industry

¹⁸ See ACCC (2021).

¹⁹ Parmiter and Bell (2010), page 7.

²⁰ Ibid. See also Reid, S. and Cann, G. (2016).

²¹ This is from the work undertaken for the NHS, see Ashworth et al. (2019), page 37.

Many of the matters in Table 1 have broad coverage in terms of societal concern, but it is important to note that most initial problems or concerns (all but the end user experience) will be felt locally, by parties who have interests in avoiding harm to their homes and businesses.

It will also be necessary to locate hydrogen communications within the larger communications piece on net zero.

1.2.4 Knowledge gaps need to be identified

There are many hydrogen announcements each week, and developments continue. We can expect that the broader community will have questions about the sector. However, we are also at the start of the development of the Australian hydrogen industry, so there is much we do not know about how it will proceed.

In many cases it will be perfectly acceptable that governments and the industry cannot answer a question in detail, but this is not always the case. Therefore, it is important that we develop a view on what questions need to be answered now, and at what level of detail. This is about understanding what people will want to know, assessing our ability to answer questions, and filling our own knowledge gaps on matters that require it.

The lack of global precedent for a major hydrogen industry makes this challenging. On the one hand, the hydrogen industry has no negative track record or longstanding reputational issues to manage. But this also means that we don't know what might derail the necessary work to get the industry up. And the industry has not banked years of incident-free operations to contextualise anything that might happen. The politics of climate change and of the changing fossil fuel markets mean that we don't know how some parties might strategically use a hydrogen incident, and we don't know how resilient the industry and politicians would be to such an attack.

On this matter, it is important to note that social licence risk is not directly aligned with what the technical experts might think. Engineers on a project may feel confident that risks are managed as well as possible, and that a business has even gone well above reasonable approaches to risk and harm management. However, this doesn't matter – social licence is about *stakeholders' perceptions of harm*, which can manifest and grow in unpredictable ways. Further, countering perceptions of harm with even more technical information can actually further erode a precarious social licence situation.

2 Laying the foundation

The emerging hydrogen industry has a strong set of messages on benefit, but we can see there is also risk to its social licence based on its direct and indirect connections with other social licence matters.

Meeting the NHS action to “to provide clear and accessible information about risks, benefits and safe use” requires us to understand how communications about these things could best be provided to support rather than risk the social licence of the industry. The risks and benefits of hydrogen are not uncontroversial or simple topics, so it is essential that we unpack them to consider who we are communicating with, on what topics, at what level of detail, and at what point in time.

It is important to understand the questions people have about the risks and benefits of the industry, so we can tailor messages that meet consumer need. We need to support shared language and communications, to achieve consistency across the Australian hydrogen industry, whether it is being spoken about by business, government, academia or others.

Further, we need consistency to present one voice of ‘Team Australia’ both locally and internationally, and to avoid unnecessary stakeholder confusion. The independence of states and territories going their own way, rather than presenting a united front, is a topic that has come up in community and stakeholder research²² and is regularly experienced as a negative position for Australia in international trade discussions.

2.1 Topics for public communications

2.1.1 Research findings to date

In work undertaken with survey respondents and focus group participants on attitudes toward hydrogen, Australian research has found:

- People are generally positive about the development of a hydrogen industry in Australia but do “not have enough experience of hydrogen to form strongly enthusiastic attitudes towards it”.²³ The provision of factual information during a 2021 survey “did help to strengthen support for those who had previously expressed no opinion, however it did not influence those who were strongly opposed”.²⁴
- In 2019, people’s questions and concerns focussed on “costs, benefits, opportunities, risks, and safety, as well as identifying the associated impacts for individuals, households, regions and the environment”.²⁵ By 2021, safety was said to be “the number one priority for Australians to ensure the development of a successful hydrogen industry and will require adequate regulations are in place provide confidence”.²⁶

²² Ashworth et al. (2019) page 5.

²³ Martin, Ashworth, Petrova, Wade and Witt (2021), page 34.

²⁴ Ibid.

²⁵ Ashworth et al. (2019), page 6.

²⁶ Martin et al. (2021), page 10.

- People support using renewable energy to make hydrogen but recognise the challenge of achieving scale in renewables, including for siting projects. In 2021, it was found that while people accepted hydrogen for export use, “they were more likely to agree to a production facility near them for domestic use rather than for export”.²⁷
- In general, people are particularly interested in:
 - The longer-term strategy and the regional and national benefits from a hydrogen export industry, such as those related to jobs and skills.
 - The environmental impacts of the industry, with the use of water for electrolysis being a key concern, and particularly so for drought affected communities: in 2019 “the concept of exporting hydrogen and ‘our water’ was not viewed positively”.²⁸
 - Information that manages expectations on project timeframes and associated benefits.

These findings are consistent with public hydrogen discussions to date.

In time, we will also likely see questions from consumers about the effect of the energy transition – and the role of hydrogen – on energy/fuel affordability. It is important to note that people will likely not want to pay more for hydrogen. In a 2019 survey, close to a quarter of respondents said they would only pay for hydrogen if it was “cheaper than conventional technologies”. Willingness to pay was found to correlate with global warming beliefs, but even those who believed that global warming presented a threat did not want to pay more for energy.²⁹

Given the role of energy as an essential service for domestic and businesses, energy affordability (and system reliability) are fundamentally important community issues and will be of strong interest to political leaders, who will be seen by consumers (voters) as being ultimately responsible for the cost of living.

2.1.2 Proposed hydrogen communication topic categories

Given experience and research findings to date, the major topics that should be addressed by public communications on hydrogen are shown in Figure 1.

These are topic categories – there will be context, detail and further categories within many of these, depending on purpose and audience.

²⁷ Ibid. However, we need to consider what people thought domestic supply to be. The 2021 survey seemed to focus on domestic supply as only what people would use in the home – such as a replacement for natural gas for cooking and heating. Export was set against this rather than against a much larger domestic industry with manufacturing (and thus quality employment) capabilities. Similarly, it was noted in 2019 (Ashworth, 2019, page 22) that “Export had the highest support levels of all hydrogen applications provide [sic] safety, the environment and domestic supply are guaranteed”. Again, given that ‘domestic supply’ hosts a suite of applications, and so seems to come both first and second priority depending on definitions, this is less of a clear direction about application priorities and more a sign that ‘domestic’ supply/use requires clarity for communications.

²⁸ Ashworth et al. (2019), page 7.

²⁹ Ashworth et al. (2019), page 12.

Topic categories that require message content

- Safety:
 - Community safety
 - Consumer safety
 - Employee safety
 - Emergency services requirements
- Environment:
 - Land access, coexistence with other uses and values (e.g. visual/auditory amenity, cultural/heritage, biodiversity)
 - Water access, quality, coexistence with other uses and values
 - Air quality and dust (e.g. from construction)
- Community:
 - Workforce opportunities and training; associated skills, contracts and services required
 - Project consultation and community engagement through project lifecycle (including decommissioning)
- New markets:
 - Choices available to purchase
 - Infrastructure to support choices, including refuelling
 - Hydrogen fuel/equipment comparison on key factors, including lifecycle costs
- General
 - Hydrogen basics
 - Economic benefits for regions and Australia as a whole
 - Renewables credentials
 - What future changes to expect
 - Where to find information
 - Energy security/independence (local and regional/national)
 - Implications for essential services costs

Figure 1: Hydrogen topics for public communications

Some of the topics in Figure 1 will be more significant to some individuals than others, and we can see from previous research that people's interest is most concentrated on safety for themselves and the environment. This makes sense given that the hydrogen industry is a new concept that could represent a change to existing lifestyles; people will in the first instance seek to protect themselves from loss and harm.

As noted above, social licence is not explicitly granted but it can certainly be taken away if a host community or broader society perceives harm will arise from outsider activities.

Figure 2 shows a basic version of Maslow's well-known hierarchy of needs, which identifies that people's most basic physiological needs (such as food and shelter) must be met before they tend to value psychological needs and the more esoteric value of self-actualisation. This is a useful way to think about the issues we can reasonably anticipate for the hydrogen industry and how strongly people will feel. We can see from this framing of issues that matters relating to basic needs must be

prioritised in communications, where we must at the least be able to demonstrate and communicate no harm to people’s way of life.³⁰

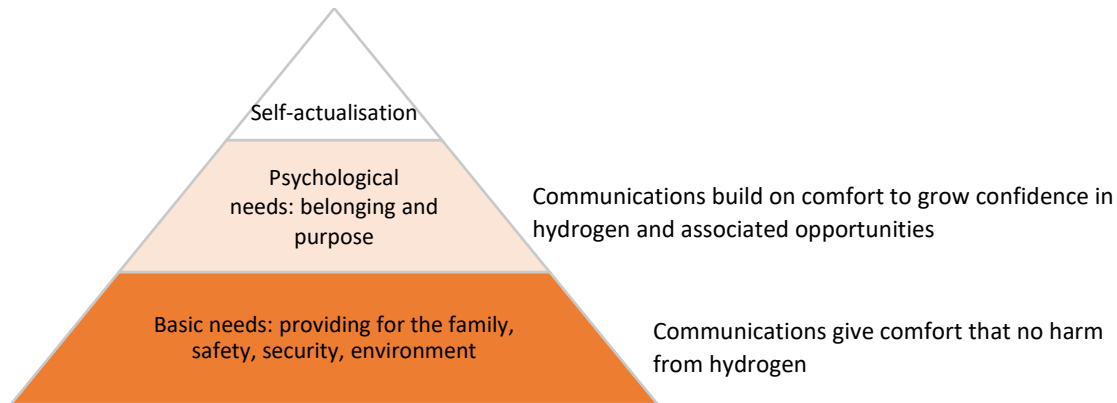


Figure 2: Maslow’s hierarchy of needs repurposed for hydrogen communications

Figure 3 shows the hydrogen topics³¹ allocated into four quadrants, which relate to the two dimensions of:

- whether a topic will be more likely oriented to localised or broader content and communications delivery; and
- the natural orientation of a topic toward harm or opportunity.

The allocation applies generally across stakeholders at this stage, and we can see that topics can shift quadrants. Some of the topics are more responsive to framing as a positive or negative, and so they can be – at different times, for different stakeholders – either a concern or an opportunity.

For example, ‘water access and management’ is framed here as more about a potential harm, because Australia is a relatively dry country and communities will be concerned about water use and water security. This could be a major issue if the industry’s effect on local or regional water is seen as breaching basic needs of other stakeholders. However, this will depend on what kind of water is used, and where. Use of desalinated seawater is likely to be viewed more favourably than industry use of potable or high-quality raw water (although wastewater and waste products cannot be forgotten). Even with ground or surface water (not seawater), for irrigators and others who hold water rights, there may also be opportunities here for water trade with the industry.

³⁰ Matters get more complicated if this framing is overlaid on concerns about the energy transition, because if hydrogen is introduced as a way of reducing loss in basic needs (that is, replacing jobs lost, and/or preventing further climate change) then the base level of the triangle would not be about harm but opportunity to reduce loss. However, it is unlikely that the bulk of the population would be starting from this position at this stage. Further, if people understood the issues well enough to see hydrogen as an inevitable step within the energy transition there would still be a need to start with communications about why it’s not a *harmful* step.

³¹ Except hydrogen basics, such as ‘hydrogen is the lightest element’ and ‘hydrogen is made not found’, because this information is not usefully weighted to any particular quadrant.

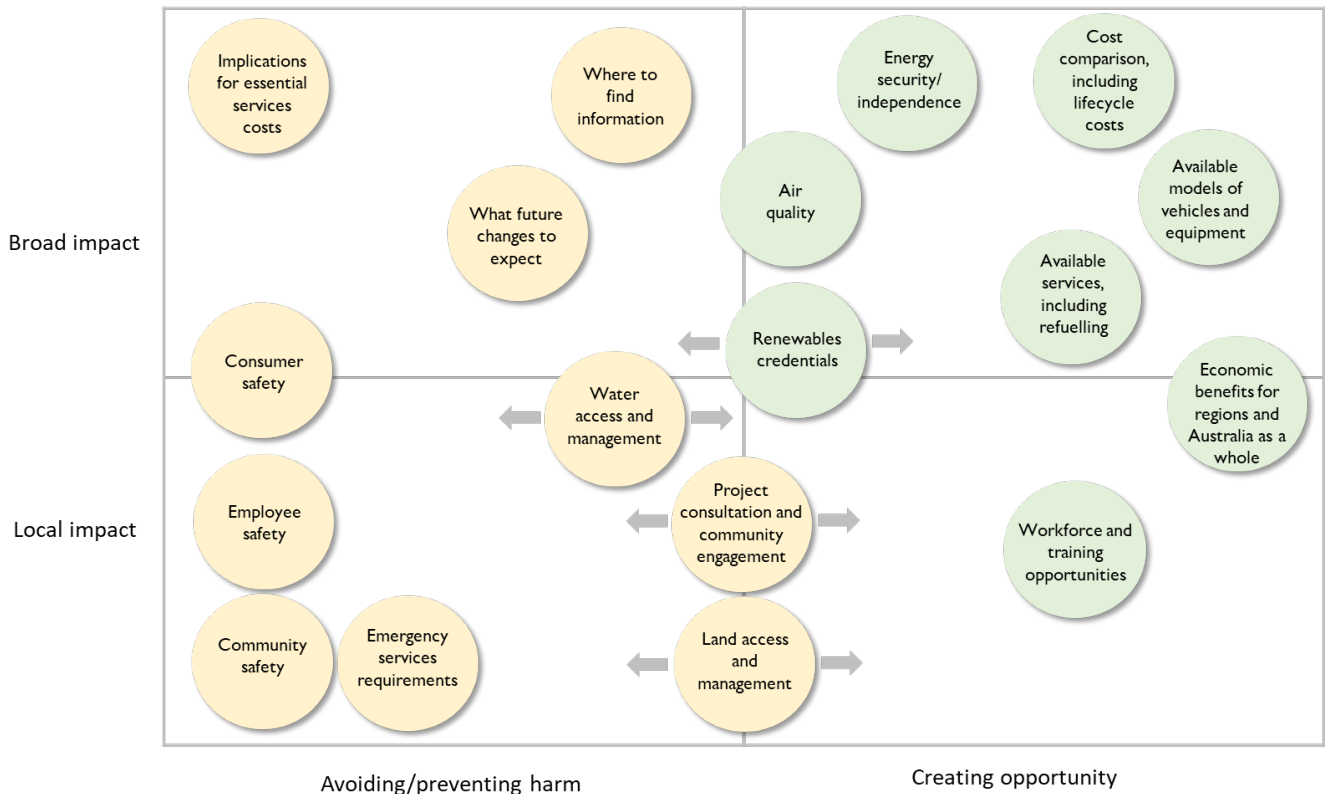


Figure 3: Hydrogen topics for public communications across key dimensions

Access to land is a similar matter. This is an issue related to the wind and solar generation required for the energy transition as a whole, and hydrogen needs are within that. The coming decades will see a massive increase in renewables, and we can anticipate community concerns about effects on the land and coexisting uses. Again, this could be a major issue for the industry if it is seen to jeopardise communities’ use of their land. However, there are also opportunities for landowners to lease property or to otherwise benefit from projects on their land (although this needs to be understood from a social licence perspective as well, with the Office of the Australian Infrastructure Commissioner (2021) noting the cases it has heard about landowners who have unmet expectations of hosting assets).³²

It should be noted that the allocation in Figure 3 is based on the topic is likely to be initially experienced; for example, safety is initially a personal matter and feelings are stronger the closer to home safety issues occur. This is what makes this a local matter in the first instance. Of course,

³² The time taken to approve a wind farm means that efficiency improvements can be made and turbine numbers can fall to achieve the same output. If a landowner expected to host a certain number of wind turbines (with an associated income stream) and the final number is smaller, the landowner can become aggrieved. Further:

“The landowner may not only perceive that they have ‘missed out’ on a significant expected income stream, but may also raise concerns about the potential impacts of turbines located on neighbouring properties, including changes in amenity, audible noise, construction disruption, loss of property value and other effects of the wind or solar farm. The fact that the landowner’s neighbours are hosting turbines or arrays and receiving payments can further aggravate the situation for the landowner that missed out” (Office of the Australian Infrastructure Commissioner, 2021, page 24).

people in broader community and society can be concerned about harm that may affect others, but this is secondary, and may not become an issue if the matters can be addressed locally first.

2.2 Stakeholder groups

While there will be some degree of common interest across stakeholders on most of the topics proposed (and all are public interest matters) the intensity of that interest will vary across key stakeholder groups.

Table 2 shows the key stakeholder groups based on how their lives are – or will be – touched by hydrogen, and the kinds of things they are likely to want to know. The key groups shown are users of land and natural resources, workforce and required operational experts, consumers, societal influencers, and owners of outcomes. Strongly negative views from any one of these could cause a cascading effect that results in a loss of social licence for a business or the whole industry.

Stakeholder group	People
Group 1: Users of land and natural resources	People who highly value their use of the environment (land, water and air) for business or lifestyle, e.g., communities, neighbours, ³³ councils, local businesses, landowners, residents, farmers, tourism operators, tourists.
Group 2: Hydrogen workforce and required holders of skills	<ul style="list-style-type: none"> a. Future direct and indirect employers and employees of the industry, e.g., engineers, technicians, mechanics, gas fitters. b. People supporting social services, e.g., emergency services.
Group 3: Active hydrogen consumers	People and businesses choosing to buy hydrogen or related products via: <ul style="list-style-type: none"> - fuel markets - vehicle and equipment markets, e.g., car, bus, truck, fleet, tractor, stationary fuel cell and appliances - service markets, e.g., FCEV maintenance via mechanic.
Group 4: Passive hydrogen consumers	<ul style="list-style-type: none"> a. People who don't choose to buy hydrogen but still use it, e.g., natural gas users receiving blended gas, users of FCEV public transport. b. People who may choose in the future (become Group 3) when the market evolves, e.g., future FCEV purchasers.
Group 5: Societal influencers	People engaging on hydrogen issues and/or industry reputation by: <ul style="list-style-type: none"> - observing and commenting, e.g., environmental activists, media - making connections, e.g., industry associations - advocating and sharing information, e.g., various comms people, local leaders.

³³ 'Neighbours' indicates people affected by projects but not as landowners. As noted by Office of the Australian Infrastructure Commissioner (2021, page 32): "Lack of effective consultation with neighbours can lead to a range of material issues for a project, including conspicuous opposition to the project (and any modifications to the proposed project), formal objections that may lead to planning/approval delays and appeals, legal actions against the project or planning authority, the project (or elements of the project) not being approved as well as widespread negative media coverage about the project and the industry more broadly".

Stakeholder group	People
Group 6: Owners of outcomes	People creating the markets/seen to own the outcomes, e.g., governments, councils, regulators.

Table 2: Draft stakeholder groups for communications purposes

This means of considering stakeholders was proposed by the Australian Hydrogen Council in 2021 and socialised with its social licence working group. Members of this working group include academics on social licence, industry and the federal and state governments.

The groups are not mutually exclusive or static. People will shift categories with life changes, and they will also fall into multiple categories because they value different things at the same time. For example, an owner of a large dairy farm might be in the following groups:

- Group 1 as a landowner and local business;
- Group 2 as an employer (in Group 3) that needs trained employees;
- Group 3 as an early adopter of hydrogen technology to treat milk;
- Group 4 as a possible future FCEV purchaser for its truck fleet; and
- Group 5 as a community leader and major employer in its region.

In developing public messaging, it is not being suggested here that separate messages are required for each group, but that work needs to be undertaken to understand different perspectives and what must be accounted for. Early communications are less likely to be differentiated.

Another means of understanding stakeholders is to consider their demographics and likely psychological profiles. This is an approach commonly used in marketing as it helps identify key markets and the best channels for message delivery. However, this is where we need to see the difference between communications for our purposes – as having a strategic risk element that requires a foundation in understanding stakeholder concerns – and communications as marketing an existing or uncontroversial message.

2.2.1 Topic priorities for stakeholder groups

The topics covered in the previous section will vary in their importance for the different groups. In fact, the formation of the groups in Table 2 is to some degree responsive to the topics that we know need to be addressed; it is a result of thinking about how the topics will be relevant to different stakeholders according to their core values.

However, we can be more precise by considering likely issue salience for the different groups; that is, understand their prioritisation of the topics communicated to them.

As an example of the differing topic priorities, Figure 4 shows how we might think of the interests of people in Group 1; that is, people who highly value their use of the environment (land, water and air) for business or lifestyle. The sizes of the bubbles in this figure broadly represent the different priorities that this group will give to these topics, with water access and management, land access

and management, and project consultation and community engagement as the highest priorities (largest bubble size).

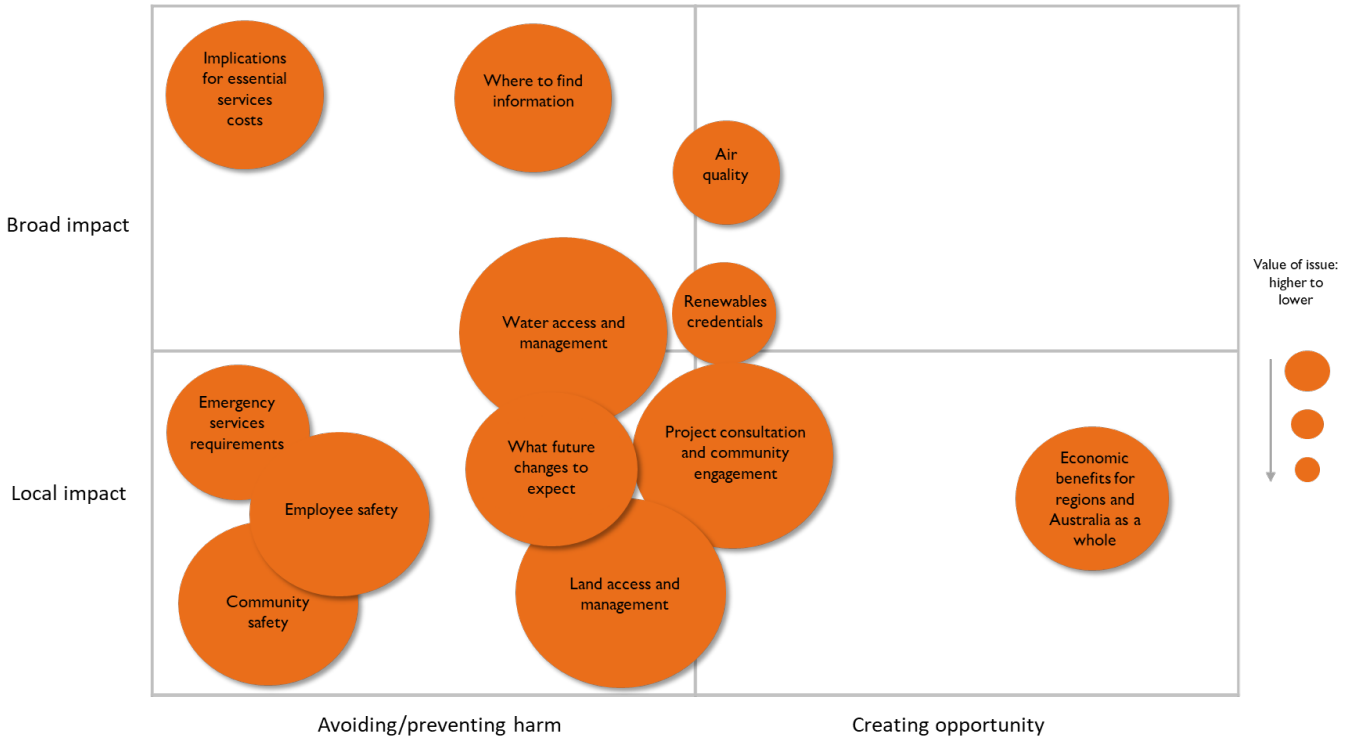


Figure 4: Example of Group 1 stakeholder needs for information with early topic priorities

Employee safety and community safety are shown as slightly lower priorities. While these are still important because Group 1 includes employers in regions (which may host hydrogen projects) and a need for an attractive (and thus safe) community, unless a Group 1 person is explicitly in the hydrogen industry, employees are unlikely to need significant safety training, and community safety as a whole is unlikely to be as important to a Group 1 person as how their fundamental access to land and water (with no loss in amenity) may be affected.

Not all of the 18 topics are shown in Figure 4. This is because the categorisation is about topic priorities, and these will vary. This is not to say that the other topics are not important, but that they will not feature prominently for this group.

We developed a version of this figure for each of the Groups 1-6 and consulted with stakeholders – see section 2.3.3.

2.2.2 Related industries

The need to provide communications about hydrogen will extend beyond hydrogen subject matter experts in industry and government. The prospect of hydrogen is relevant across much of the economy and there are several sectors adjacent to, or one step removed, from hydrogen. Parties in these sectors themselves might need to communicate with their own stakeholders about hydrogen; and ideally, they should do this with consistent language and a connection to reliable and sound information.

When in this capacity, people can be considered as being in Group 5, and this will include:

- water service providers;
- farming and irrigator groups;
- public transport fleet procurement divisions;
- NGOs in across a range of areas, but particularly in transport, water, energy and environment;
- relevant ombudsman and other complaints handling schemes;
- investment and financial advisors, both domestically and internationally; and
- chemicals and metals industry associations (although these are less dispersed, and knowledge will be higher).

We thus must ensure that messages developed through this project are shared with people in these and similar types of organisations.

2.3 Timing

Timing is as important for communications as understanding the audience and tailoring message content. Communicating too soon for a particular audience can create unmet needs and communicating too late may create a dangerous information vacuum. Communicating the right thing at the wrong time is still a failure in communication, and we can refer to cases like the Shell Barendrecht project to see why this is the case.

2.3.1 *Communications needed now*

General communications

The hydrogen industry does not yet exist at scale, and the various markets do not exist. Getting to scale will take years, so intensive, economy wide communications about changes to come are unlikely to be required for some time. Most of the groups in Table 2 are not currently highly engaged with hydrogen.

However, this is not to say that general communications are not required. Communications are already occurring about government investment announcements, such in hubs and infrastructure. Industry is also making investment announcements. Further, with the progress for emergency services training and for gas blending, people are hearing about hydrogen from their broader contacts. The media is also interested, with hydrogen featuring regularly in news articles and opinion pieces.

Research has also found that generating a degree of awareness for hydrogen has positive effects on consumer sentiment. Done properly, this can also create a prophylactic effect on industry reputation in the event of any negative publicity (such as an overseas or local safety incident).

General communications are thus vital and are a priority for this project. These communications will need to be carefully crafted to not set unrealistic expectations. Ideally, any detail should be provided as reference material that people can access when they like. Communications staff will also require access to core information, reference material and messaging that they can draw on for both proactive and reactive communications, with specialist information if there is a need for deeper enquiries (such as through a Minister's office).

Targeted communications

In the near term, communication will be needed most in communities that host projects and facilities. Production projects are happening right now, and communities – stakeholder Group 1 in particular – should be engaged from the start.

In principle, focusing on communities directly affected by the build phase of hydrogen projects simplifies the overall communications project, as geographical boundaries should make identifying issues and targeting training, monitoring and communications relatively easy. (However, the work to clarify context and views of a particular community should not be underestimated.)

The relative ease of targeting extends to end user markets for hydrogen. Public communications can target the limited number of people who currently use hydrogen, to ensure they are adequately informed. This is already occurring with the consumers receiving hydrogen blended into their natural gas in South Australia and New South Wales.

But hydrogen will also have relevance outside its means of production and use, and this is where things are harder to control. Hydrogen will be transported between sites, either by pipeline, tube trailer or within a vehicle that is using hydrogen in a fuel cell. So that means that anyone who might encounter the hydrogen on its path could have an experience that ultimately affects social licence. While hydrogen is no more or less hazardous than existing fuels and chemicals transported by road, it is new and not well understood in the community. An unfortunately timed serious road incident could delay the industry for extended periods.³⁴ This then connects the need for information to general communications.

2.3.2 Longer term communications needs

In the longer term, public communications will need to account for all stakeholder groups, and for the different markets and their timeframes for action.

Communications about hydrogen will require stages per potential market, where it is important to develop a view of the ideal level of knowledge and engagement per stakeholder group. This is important to both 'take stakeholders on the journey' and not overwhelm them at any one time, and it is also important communications do not unnecessarily trigger concerns.

The risk focus of the work also means that we will be considering the questions that will be asked by stakeholders at a minimum of two or three layers of detail, so that communications do not have the

³⁴ See Bond and Veitch (2020a, page 69), where they discuss the impact of a highly visible LPG vehicle accident in NSW. An LPG taxi exploded in 1979, causing new attention to similar incidents, and ultimately delaying the market for years.

unintended effect of losing public trust because we have started a conversation on a topical matter that we do not have the capacity to continue as required.

Further, there is a need for an understanding of project timing, to coordinate communications and messaging. This is because we will likely see multiple projects in some regions – such as the REZs – which can bring the potential for “residents to be ‘surrounded’ by wind turbines and/or solar arrays if such projects proceed”.³⁵ This will compound any issues such as noise, visual amenity and economic loss, and construction schedules overlapping can place pressure on local resources (including workforce) and infrastructure.

2.3.3 *Applying timing considerations to the proposed topics*

Figure 5 is an amended version of Figure 4, where the difference is an additional colour coding for the order of messages and what is likely to be most valuable to Group 1 stakeholders.

The suggestion in Figure 5 is a staged approach, with the order of messages to be:

1. **Scene setting information** (darkest orange bubbles), where previous studies and experiences (such as in Barendrecht) have indicated it is important to start with communicating the reason for change and benefits to host communities and the nation, and what will happen next. While the content of these messages will not ultimately be as salient to Group 1 stakeholders as information relating to water, land and project consultation, there is a fundamental need to set the scene.
2. **Key messages** (medium orange bubbles), which for Group 1 will be messages about safety, land and water access and management, project consultation and relevant information about renewables credentials and air quality. This phase may have multiple stages, depending on the community.
3. **Follow up messages** (lighter orange bubbles) are addressed later, once people feel more comfortable about the previous communications. These are important issues but are likely to come up only once people have engaged on the other topics and have follow up questions. Alternatively, we could see these as messages that would not be proactively communicated but would form part of an information kit for interested parties to access.

³⁵ Office of the Australian Energy Infrastructure Commissioner (2021), pages 57-58.

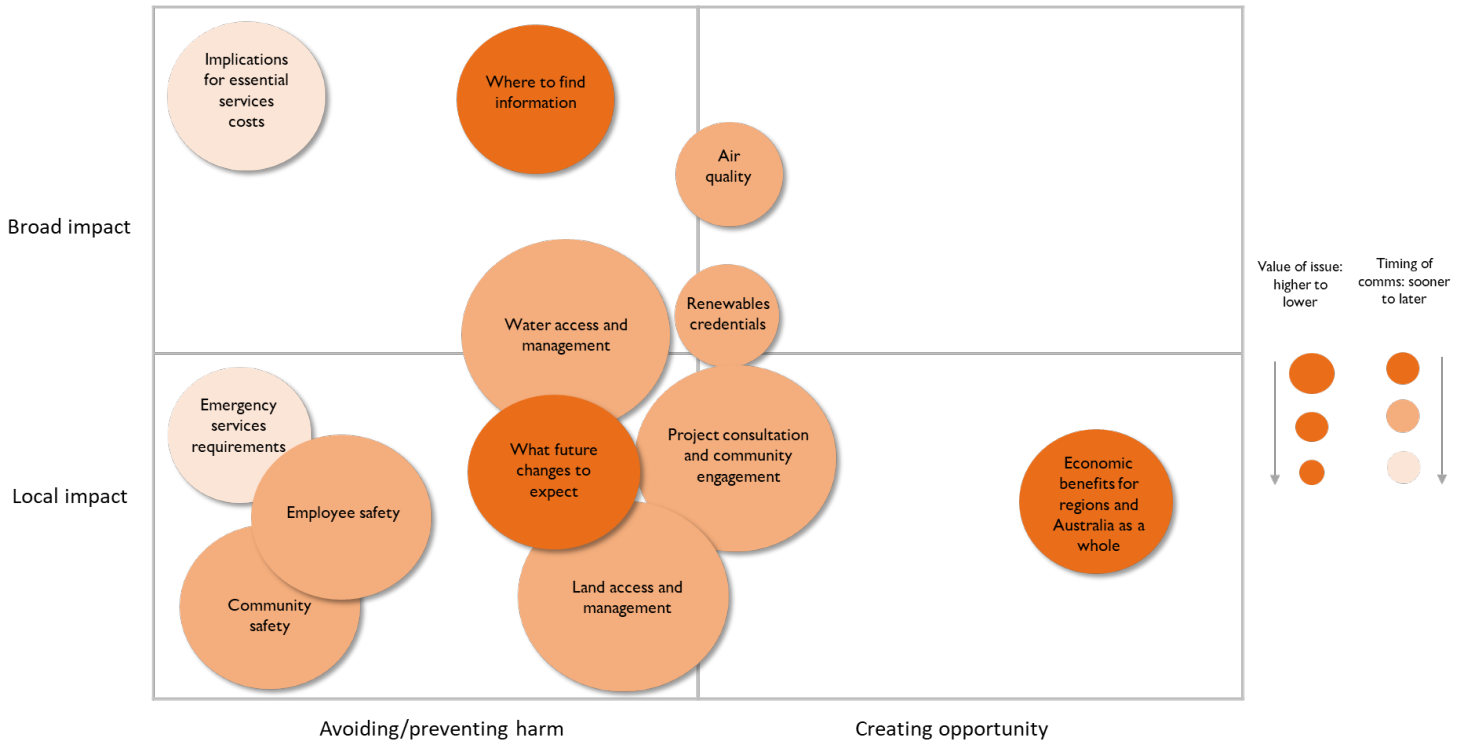


Figure 5: Example of Group 1 stakeholder needs for information, with early topic and timing priorities

As with Figure 4, we developed a version for each of the Groups 1-6 for consultation.

The material is now provided in full.

Group 1: Users of land and natural resources

- Group 1 stakeholders highly value their use of the environment (land, water and air) for business or lifestyle, e.g., communities (including Indigenous), neighbours, councils, local businesses, landowners, residents, farmers, tourism operators, tourists.
- We would expect these stakeholders to use a lens of **physical effects on the landscape and the impact on their lifestyles/businesses and local community**.
- Of the groups, this is a more localised activist audience.

1) Safety:

- a) Community safety
- b) Consumer safety
- c) Employee safety
- d) Emergency services requirements

2) Environment:

- a) Land access, coexistence with other uses and values (e.g. visual/auditory amenity, cultural/heritage, biodiversity)
- b) Water access, quality, coexistence with other uses and values
- c) Air quality and dust (e.g. from construction)

3) Community:

- a) Workforce opportunities and training; associated skills, contracts and services required
- b) Project consultation and community engagement through project lifecycle (including decommissioning)

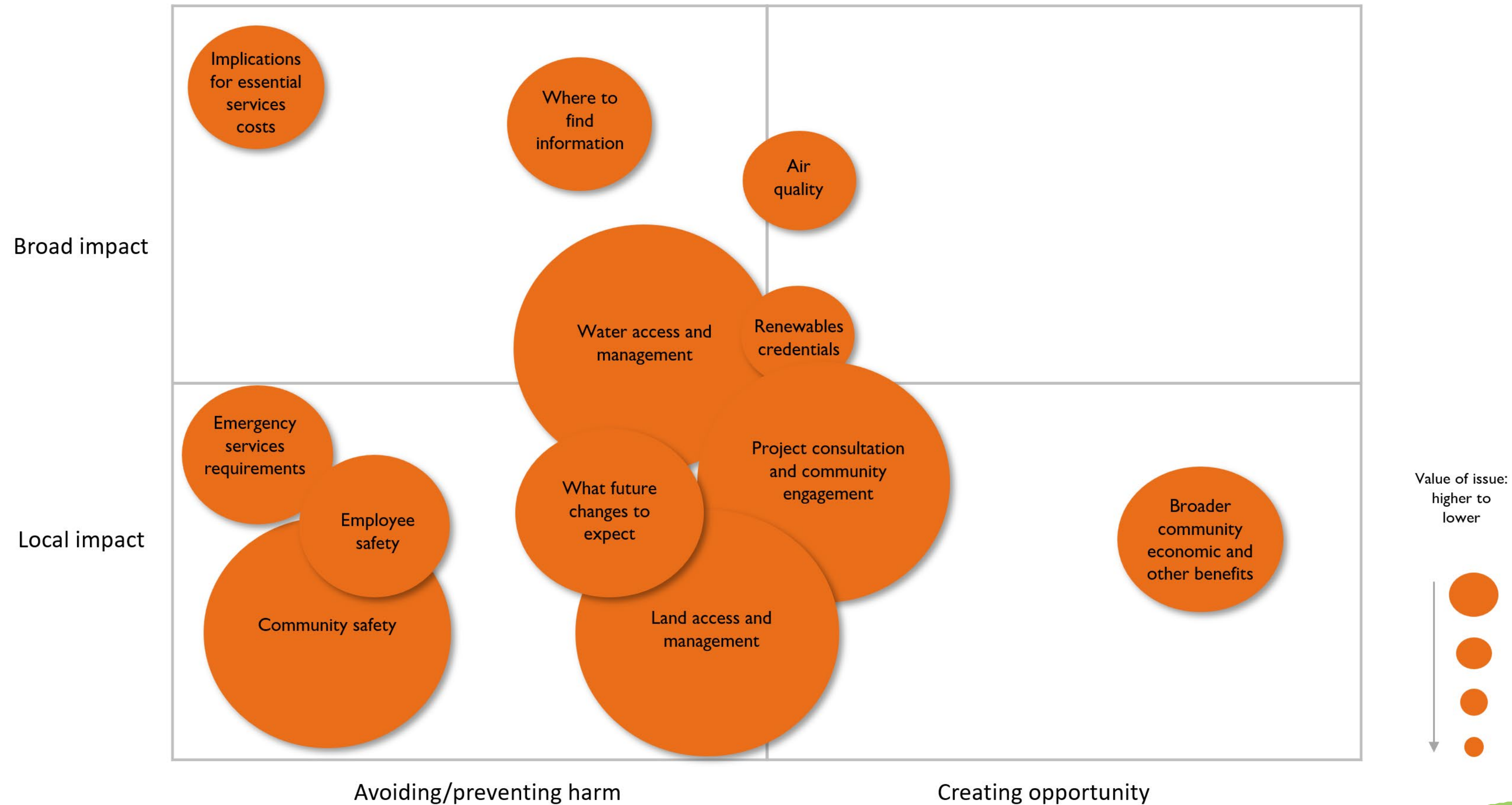
4) New markets:

- a) Choices available to purchase
- b) Infrastructure to support choices, including refuelling
- c) Hydrogen fuel/equipment comparison on key factors, including lifecycle costs

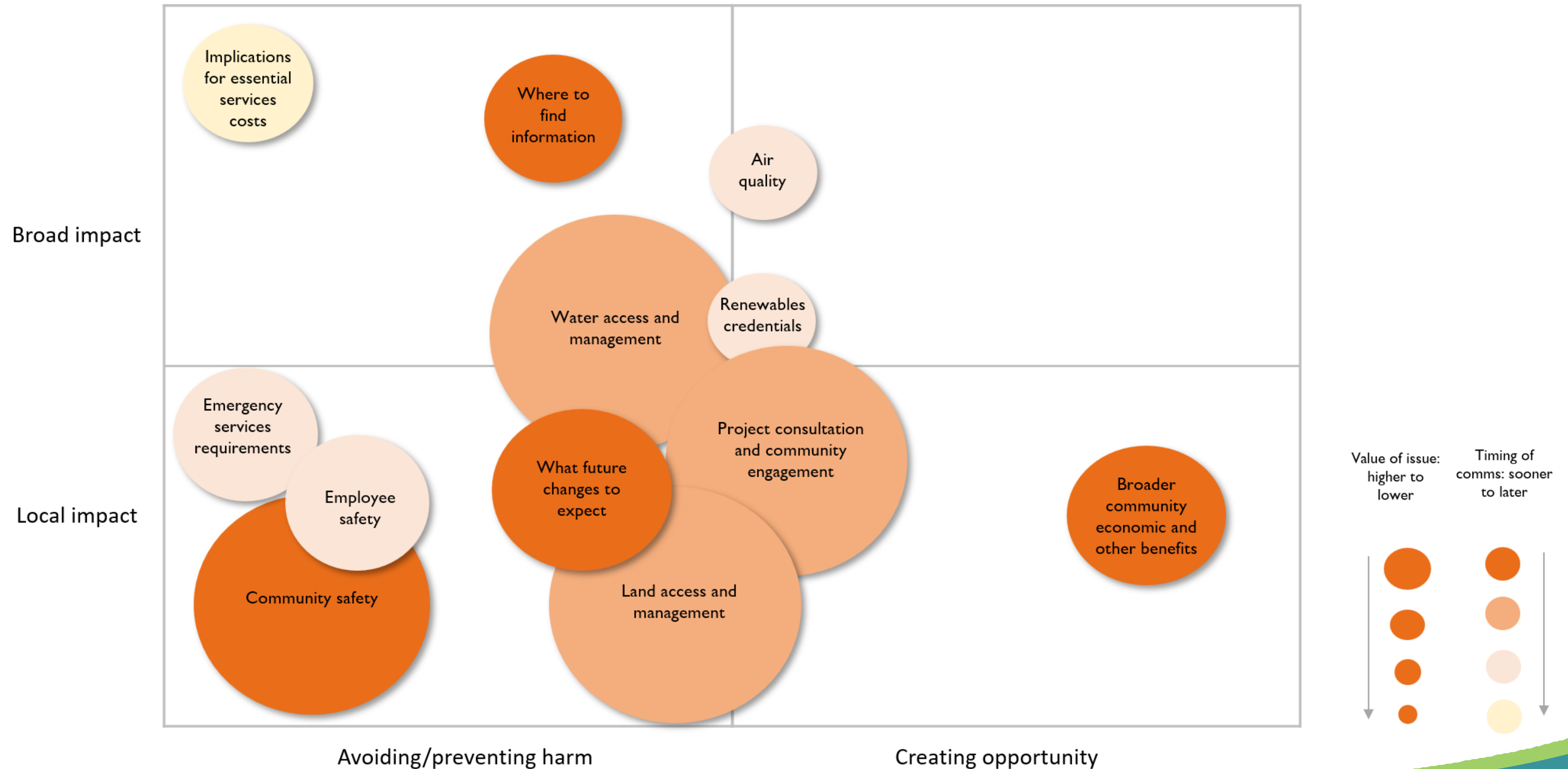
5) General:

- a) Hydrogen basics
- b) Economic benefits for regions and Australia as a whole
- c) Renewables credentials
- d) What future changes to expect
- e) Where to find information
- f) Energy security/independence (local and regional/national)
- g) Implications for essential services costs

Group 1: Users of land and natural resources



Group 1: Users of land and natural resources



Group 2: Workforce and required holders of skills

- Members of Group 2 are the future direct and indirect employers and employees of the industry, e.g., engineers, technicians, mechanics, gas fitters. They are also the people supporting social services, such as emergency services.
- We would expect these stakeholders to use a lens of **potential job opportunities, safety and training**. Employees may also value **renewables credentials**.
- Of the groups, this is a more localised and technical audience, but with activist qualities via unions.

1) Safety:

- a) Community safety
- b) Consumer safety
- c) Employee safety
- d) Emergency services requirements

2) Environment:

- a) Land access, coexistence with other uses and values (e.g. visual/auditory amenity, cultural/heritage, biodiversity)
- b) Water access, quality, coexistence with other uses and values
- c) Air quality and dust (e.g. from construction)

3) Community:

- a) Workforce opportunities and training; associated skills, contracts and services required
- b) Project consultation and community engagement through project lifecycle (including decommissioning)

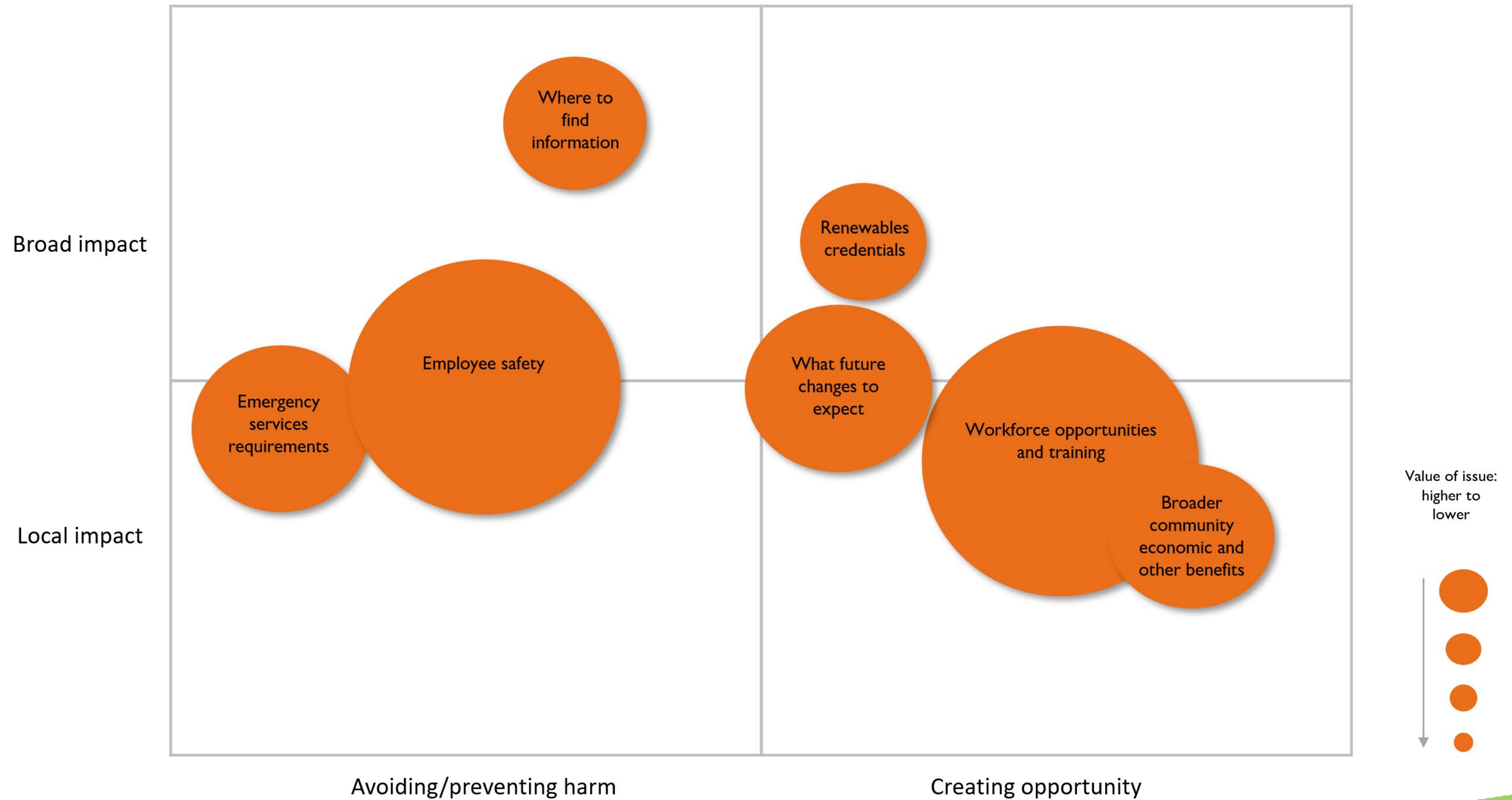
4) New markets:

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- c) Hydrogen fuel/equipment comparison on key factors, including lifecycle costs

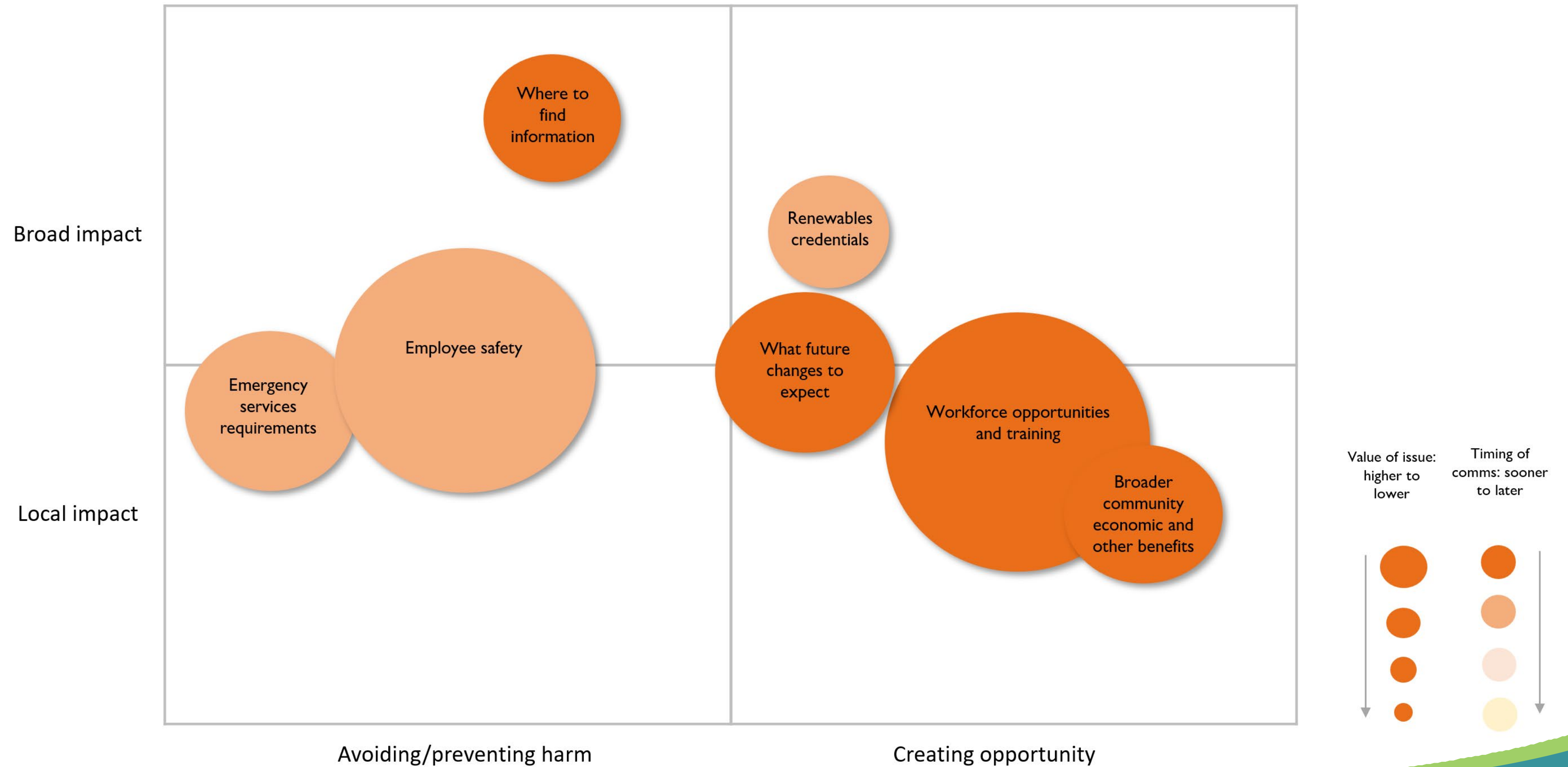
5) General:

- a) Hydrogen basics
- b) Economic benefits for regions and Australia as a whole
- c) Renewables credentials
- d) What future changes to expect
- e) Where to find information
- f) Energy security/independence (local and regional/national)
- g) Implications for essential services costs

Group 2: Workforce and required holders of skills



Group 2: Workforce and required holders of skills



Group 3: Active consumers

- Members of Group 3 are people choosing to buy hydrogen or related products via:
 - fuel markets
 - vehicle and equipment markets, e.g., car, bus, truck, fleet, tractor, stationary fuel cell and appliances
 - service markets, e.g., FCEV maintenance via mechanic.
- We would expect these stakeholders to use a lens of **opportunity for future purchases, and the value of these purchases.**
- For now, these are the early adopters (who can accept a green premium), but they are also looking for value for money, and infrastructure/services to support their purchases.
- Costs will become more important over time, and safety will always be important.

1) Safety:

- a) Community safety
- b) Consumer safety
- c) Employee safety
- d) Emergency services requirements

2) Environment:

- a) Land access, coexistence with other uses and values (e.g. visual/auditory amenity, cultural/heritage, biodiversity)
- b) Water access, quality, coexistence with other uses and values
- c) Air quality and dust (e.g. from construction)

3) Community:

- a) Workforce opportunities and training; associated skills, contracts and services required
- b) Project consultation and community engagement through project lifecycle (including decommissioning)

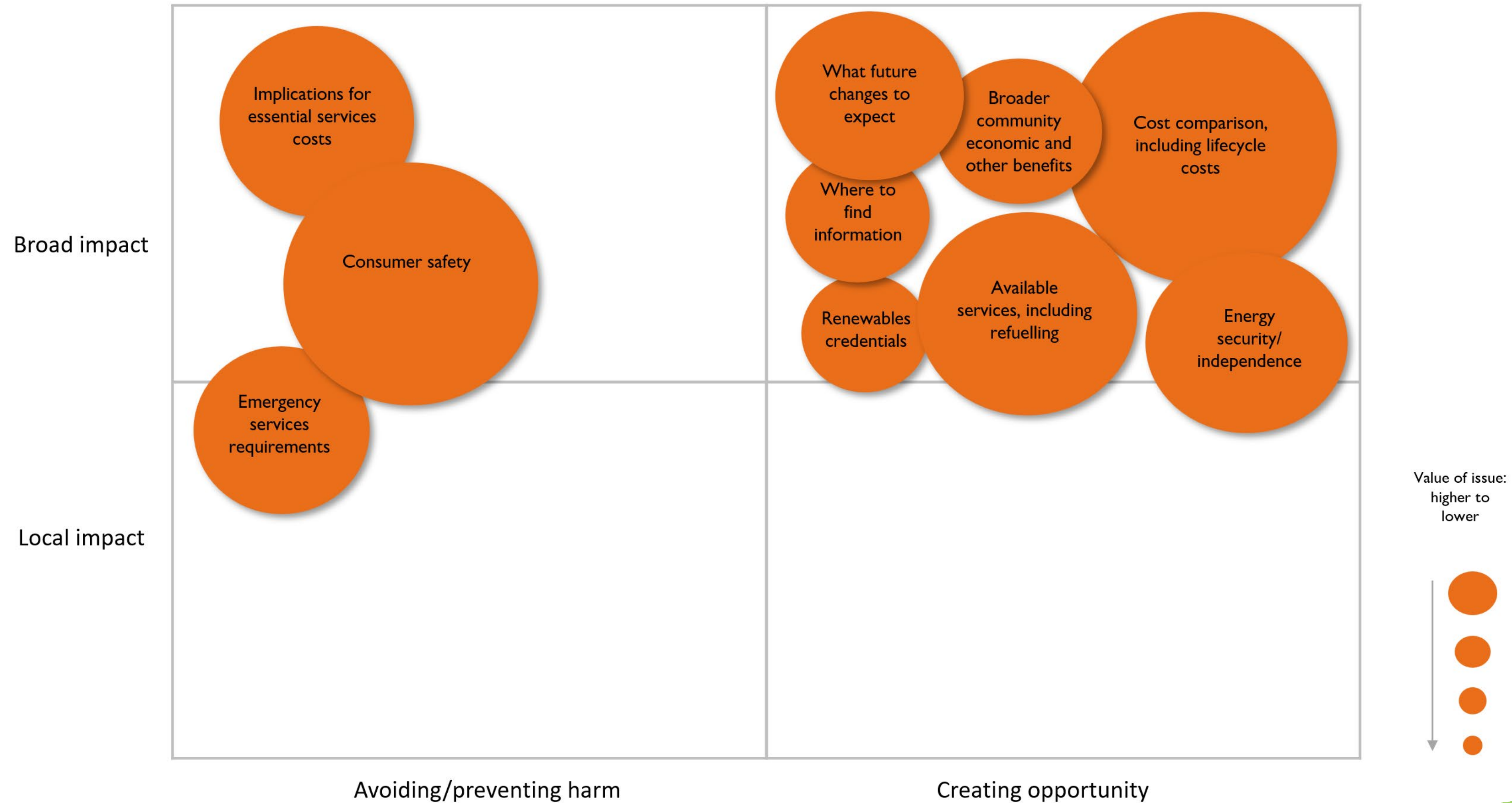
4) New markets:

- a) Choices available to purchase
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- c) Hydrogen fuel/equipment comparison on key factors, including lifecycle costs

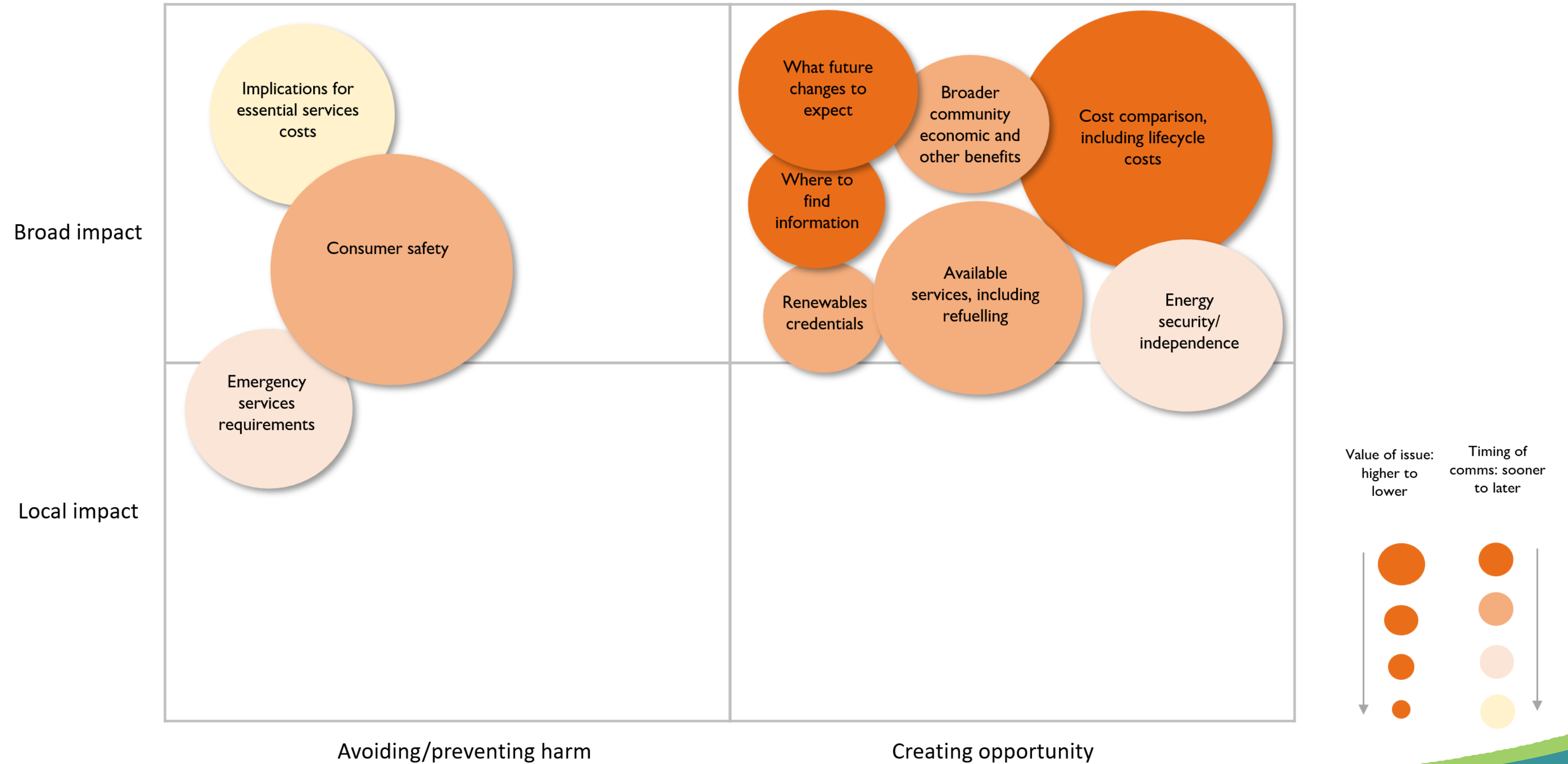
5) General:

- a) Hydrogen basics
- b) Economic benefits for regions and Australia as a whole
- c) Renewables credentials
- d) What future changes to expect
- e) Where to find information
- f) Energy security/independence (local and regional/national)
- g) Implications for essential services costs

Group 3: Active consumers



Group 3: Active consumers



Group 4: Passive consumers

- Members of Group 4 are people who don't choose to buy hydrogen but still use it, e.g., natural gas users receiving blended gas and users of FCEV public transport.
- These people may choose hydrogen in the future (become Group 3) when the market evolves, e.g., future FCEV purchasers.
- We would expect these stakeholders to **not seek information** unless they become concerned about safety or cost. Of course some may become interested and want to understand context.

1) Safety:

- a) Community safety
- b) Consumer safety
- c) Employee safety
- d) Emergency services requirements

2) Environment:

- a) Land access, coexistence with other uses and values (e.g. visual/auditory amenity, cultural/heritage, biodiversity)
- b) Water access, quality, coexistence with other uses and values
- c) Air quality and dust (e.g. from construction)

3) Community:

- a) Workforce opportunities and training; associated skills, contracts and services required
- b) Project consultation and community engagement through project lifecycle (including decommissioning)

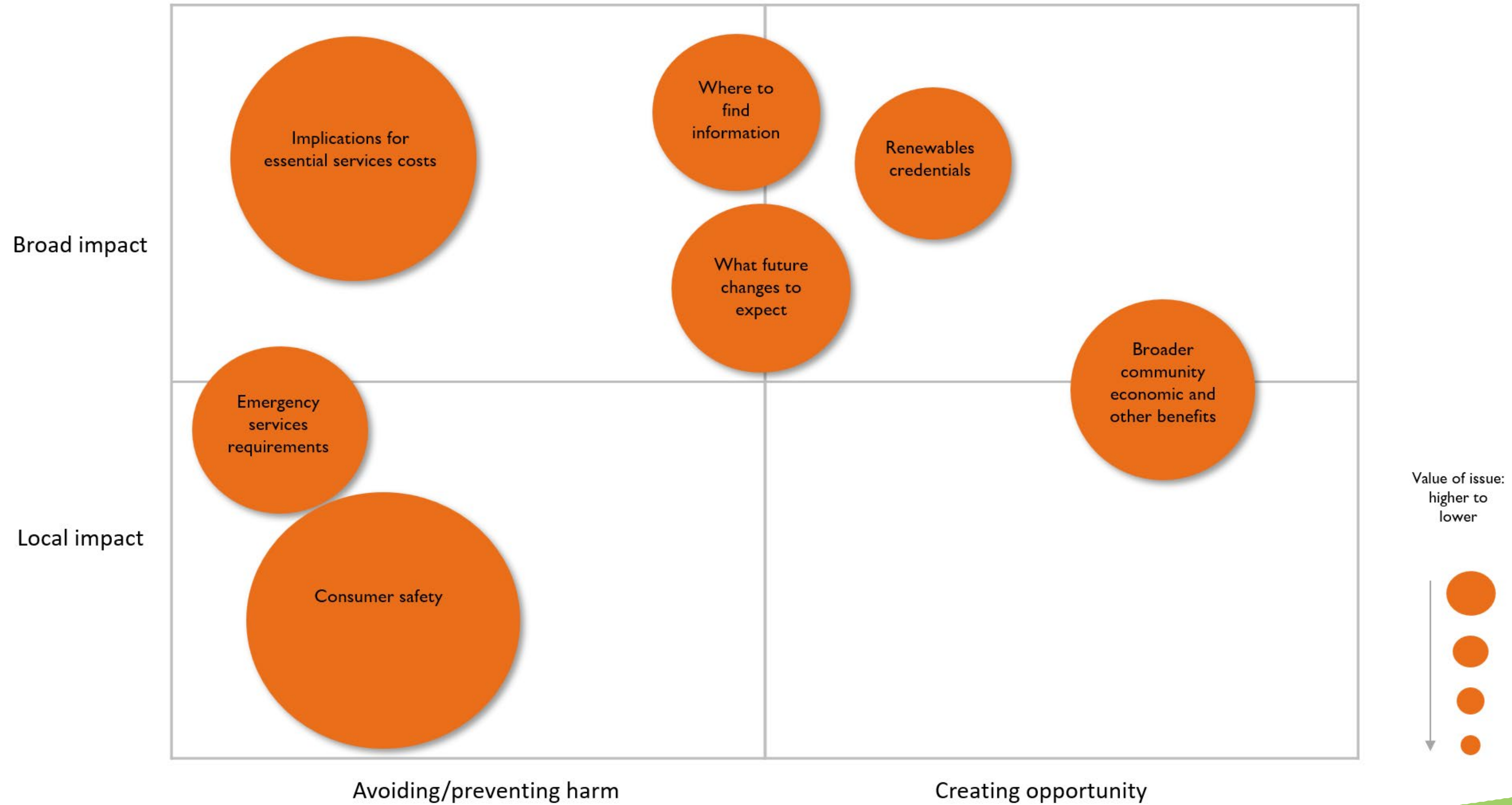
4) New markets:

- a) Choices available to purchase
- b) Infrastructure to support choices, including refuelling
- c) Hydrogen fuel/equipment comparison on key factors, including lifecycle costs

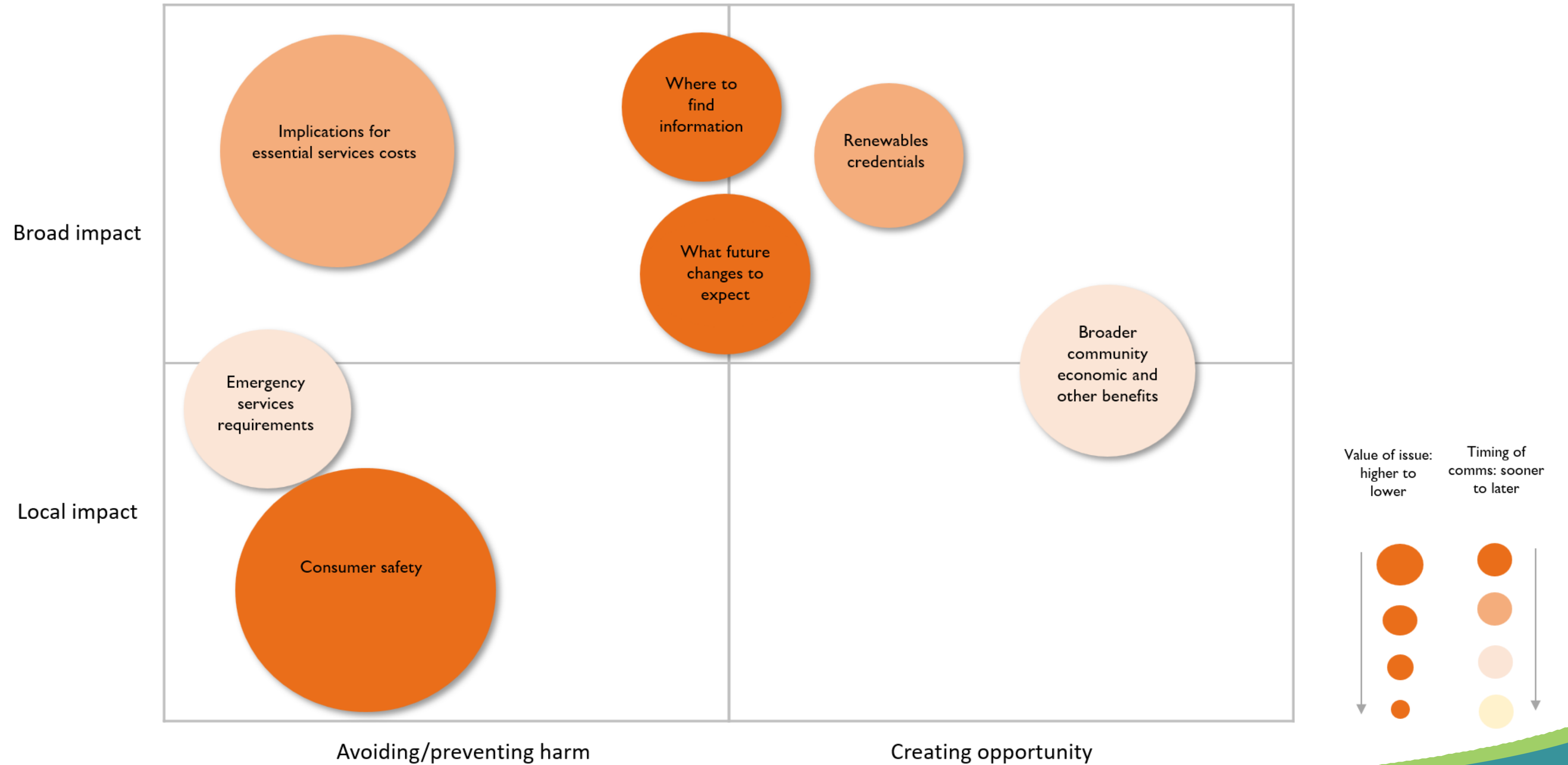
5) General:

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- e) Where to find information
- f) Energy security/independence (local and regional/national)
- g) Implications for essential services costs

Group 4: Passive consumers



Group 4: Passive consumers



Group 5: Influencers

- Members of Group 5 are people engaging on reputation by:
 - observing and commenting, e.g., environmental activists, media
 - making connections, e.g., industry associations
 - advocating and sharing information, e.g., various comms people, local leaders.
- These people may have special interests in any of the topics, but the **general interest will relate to ‘why hydrogen’, and safety**. Local interests can be merged into community engagement.
- This group is the independent catalyser group that can connect other groups and activate concerns or support confidence.

1) Safety:

- a) Community safety
- b) Consumer safety
- c) Employee safety
- d) Emergency services requirements

2) Environment:

- a) Land access, coexistence with other uses and values (e.g. visual/auditory amenity, cultural/heritage, biodiversity)
- b) Water access, quality, coexistence with other uses and values
- c) Air quality and dust (e.g. from construction)

3) Community:

- a) Workforce opportunities and training; associated skills, contracts and services required
- b) Project consultation and community engagement through project lifecycle (including decommissioning)

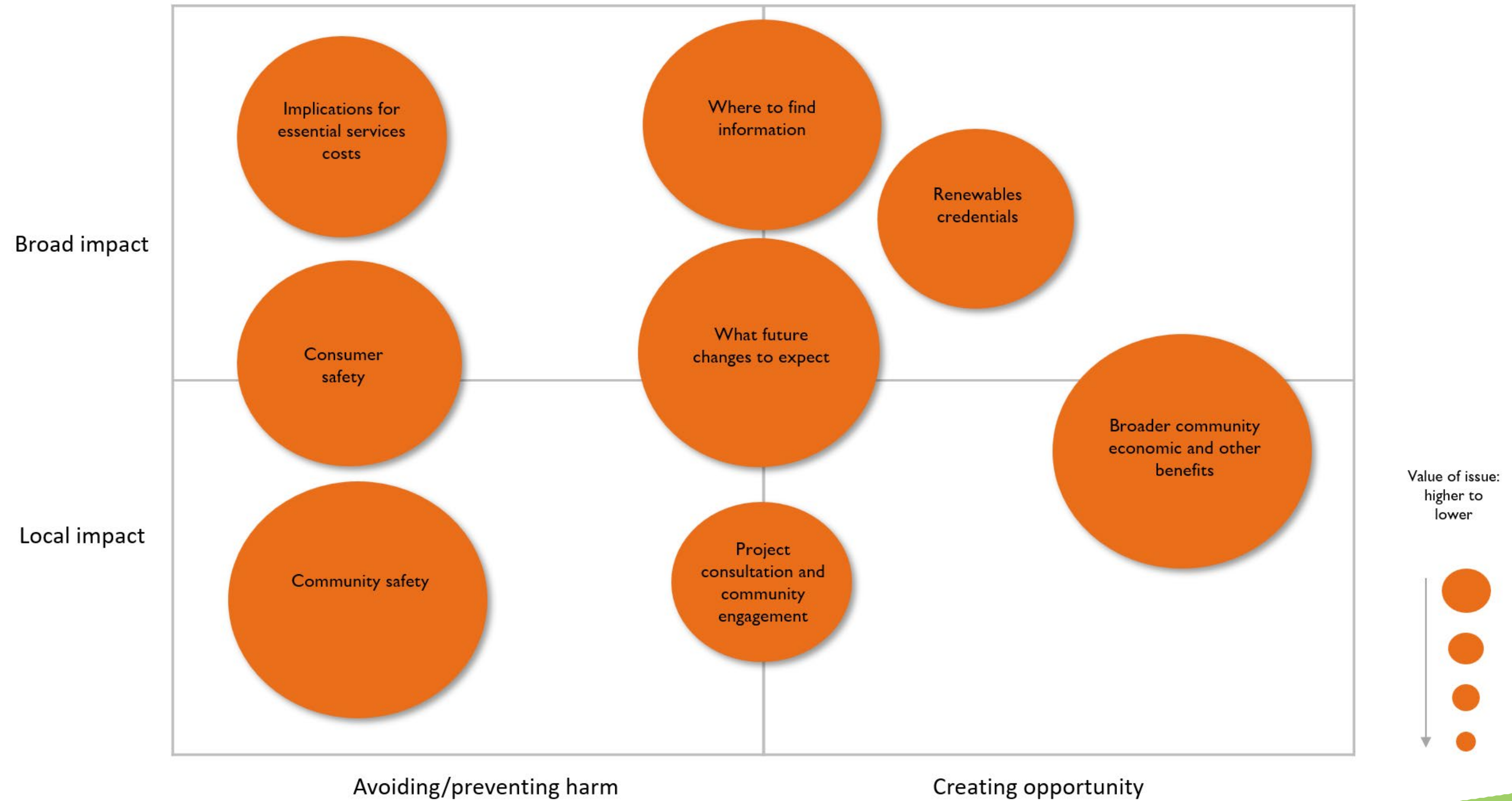
4) New markets:

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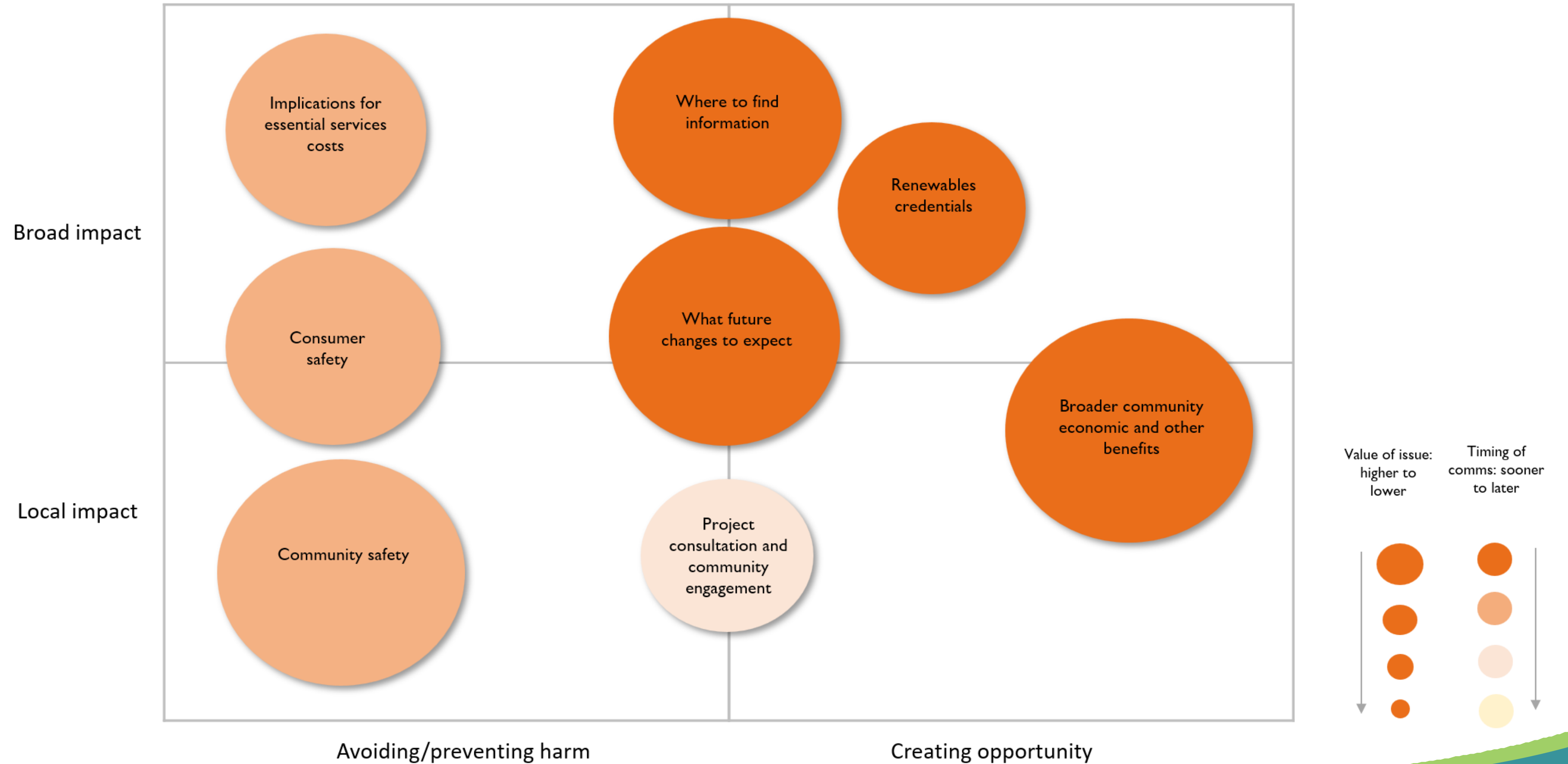
5) General:

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- c) Renewables credentials
- d) What future changes to expect
- e) Where to find information
- f) Energy security/independence (local and regional/national)
- g) Implications for essential services costs

Group 5: Influencers



Group 5: Influencers



Group 6: Owners of outcomes

- Members of this group are the people creating the markets and/or seen to own the outcomes, e.g., governments, councils, regulators.
- These people will focus on how they **can and will be held accountable** by their own stakeholders.
- They see their fortune as tied up with the industry's fortune and they need for the industry to perform well (no harm, generating benefit).

1) Safety:

- a) Community safety
- b) Consumer safety
- c) Employee safety
- d) Emergency services requirements

2) Environment:

- a) Land access, coexistence with other uses and values (e.g. visual/auditory amenity, cultural/heritage, biodiversity)
- b) Water access, quality, coexistence with other uses and values
- c) Air quality and dust (e.g. from construction)

3) Community:

- a) Workforce opportunities and training; associated skills, contracts and services required
- b) Project consultation and community engagement through project lifecycle (including decommissioning)

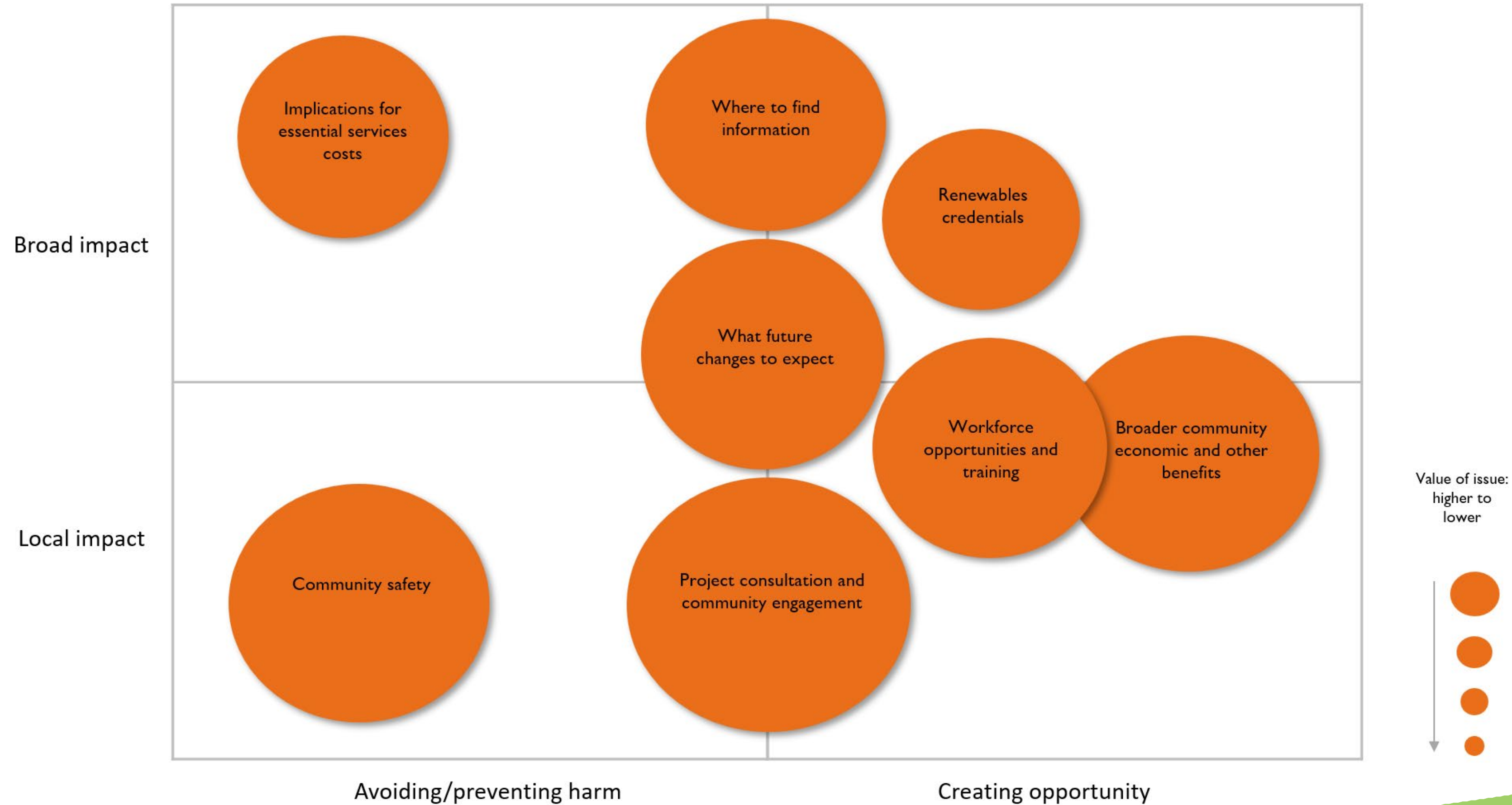
4) New markets:

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- c) Hydrogen fuel/equipment comparison on key factors, including lifecycle costs

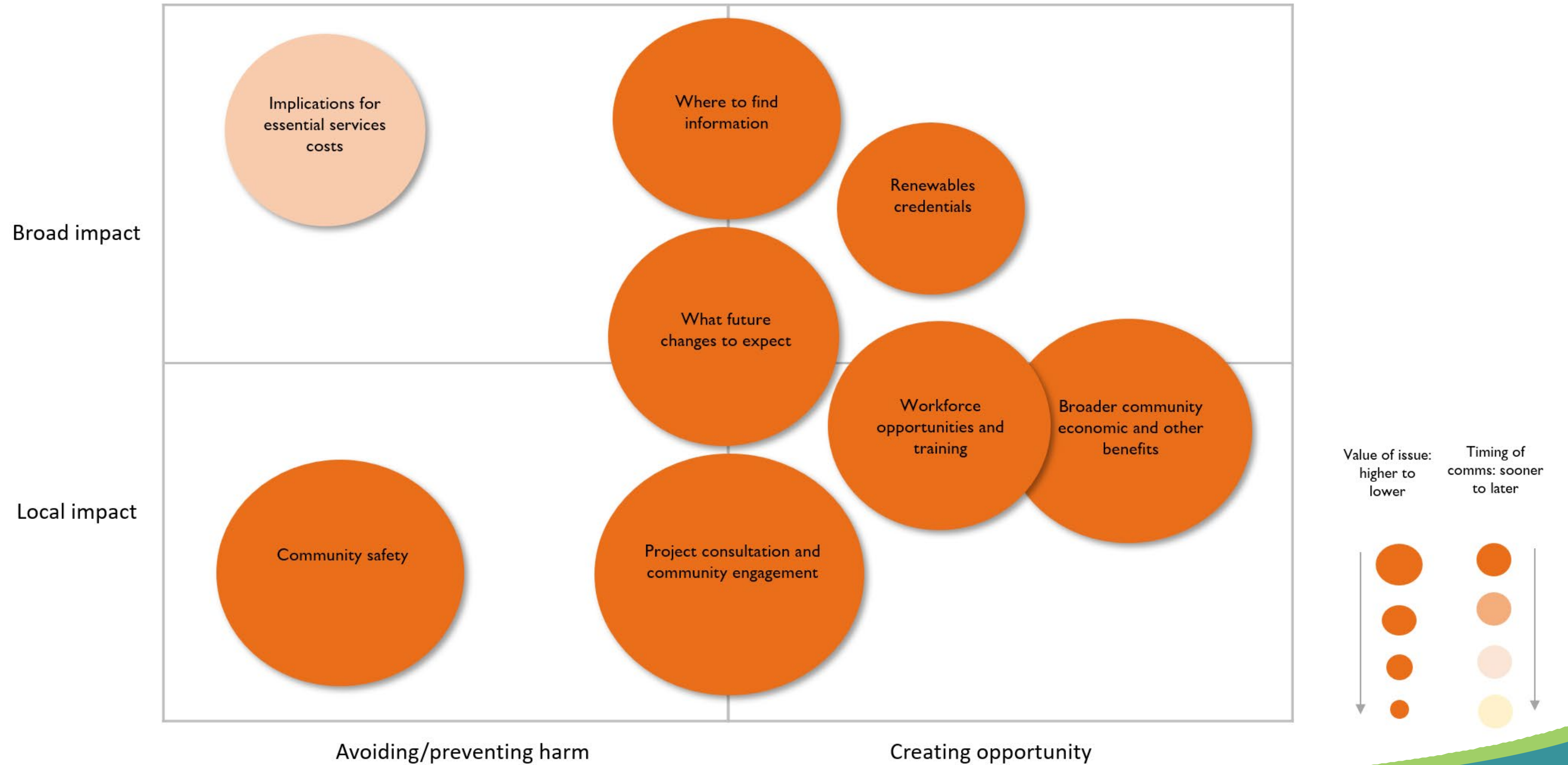
5) General:

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- c) Renewables credentials
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- g) Implications for essential services costs

Group 6: Owners of outcomes

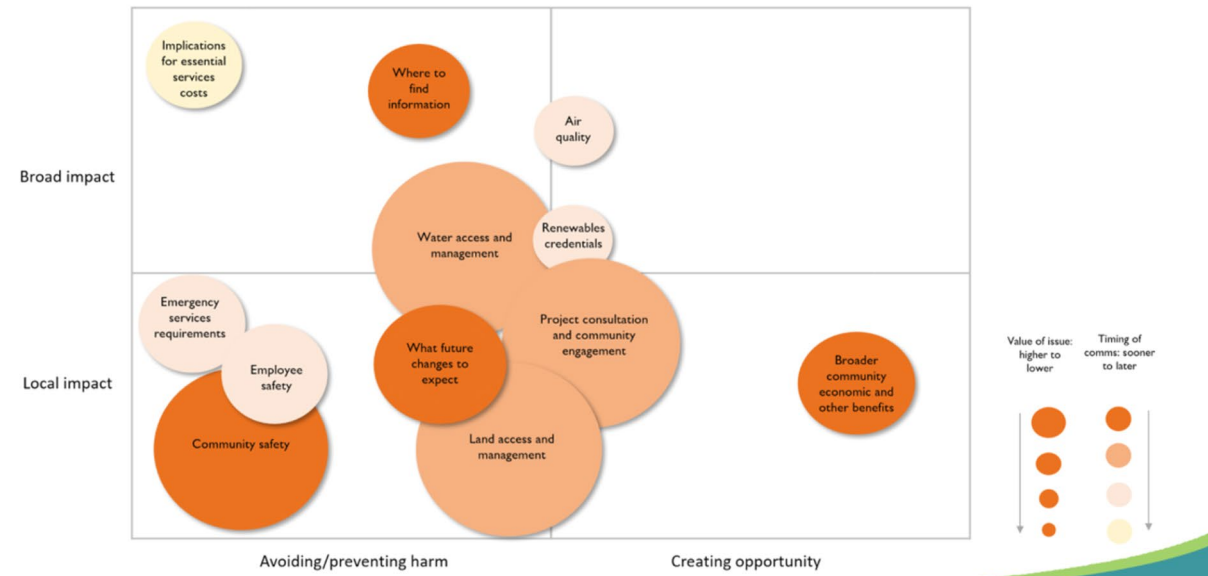


Group 6: Owners of outcomes



Overview

Group 1: Users of land and natural resources



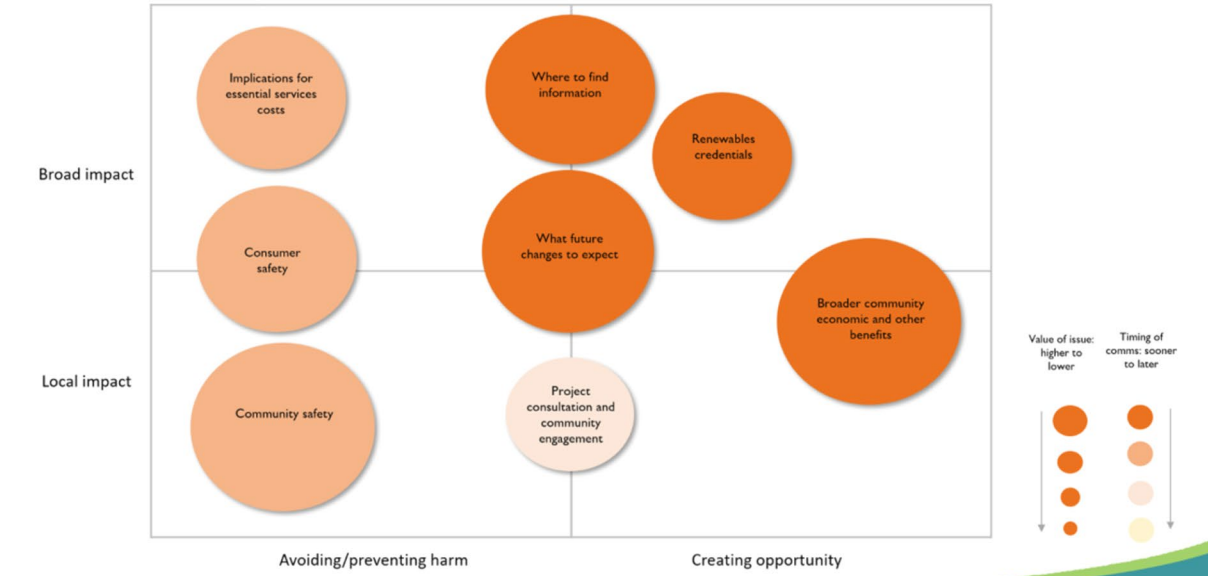
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Group 3: Active consumers



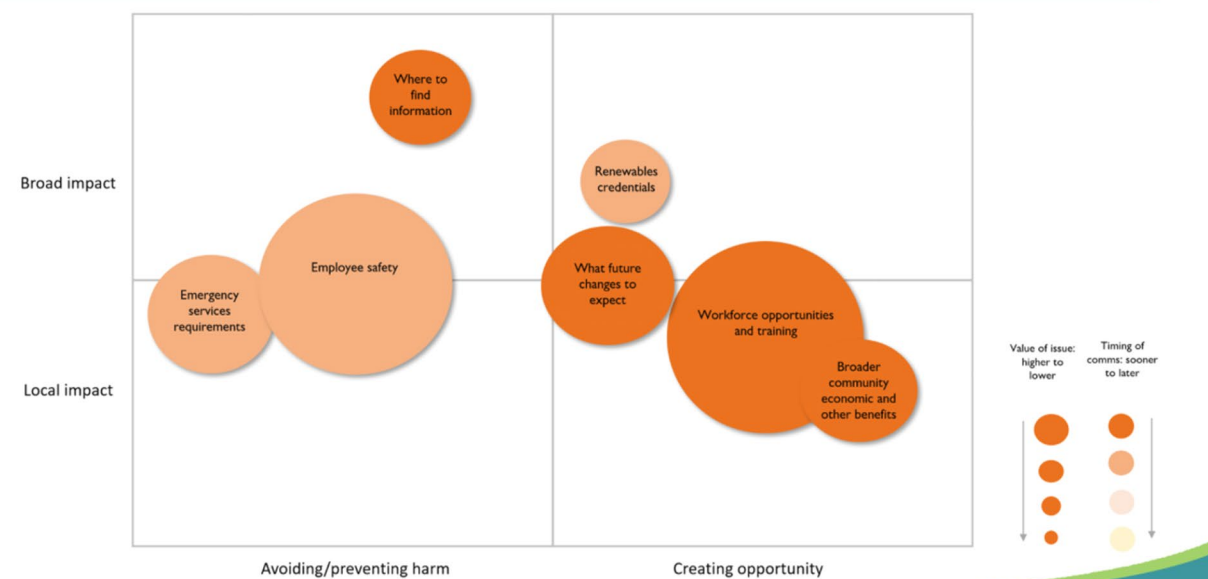
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Group 5: Influencers



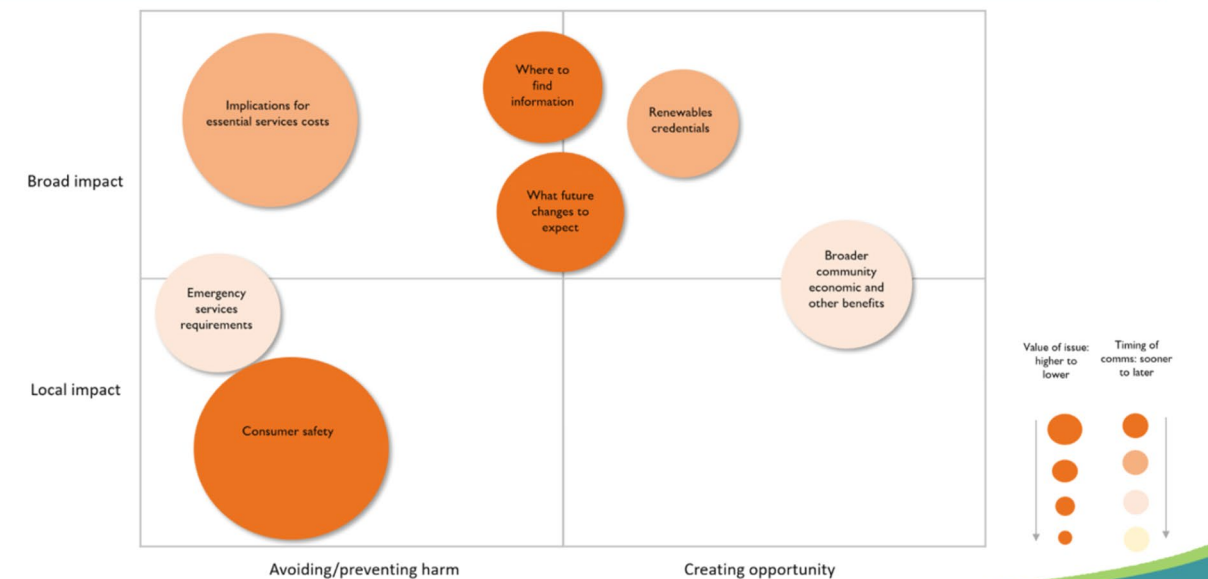
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Group 2: Workforce and required holders of skills



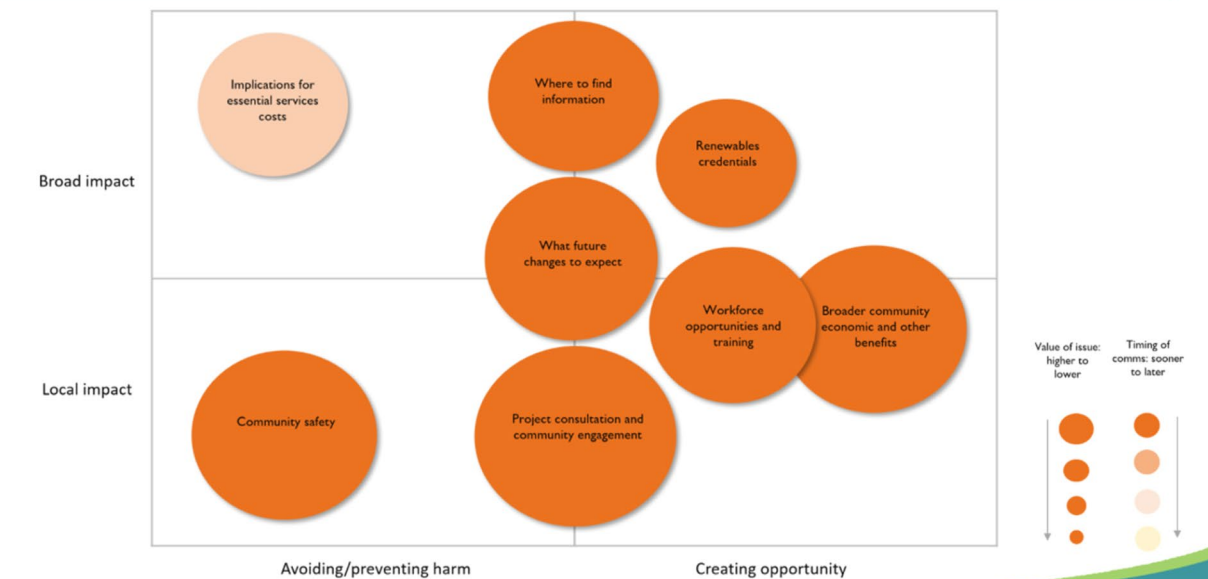
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Group 4: Passive consumers



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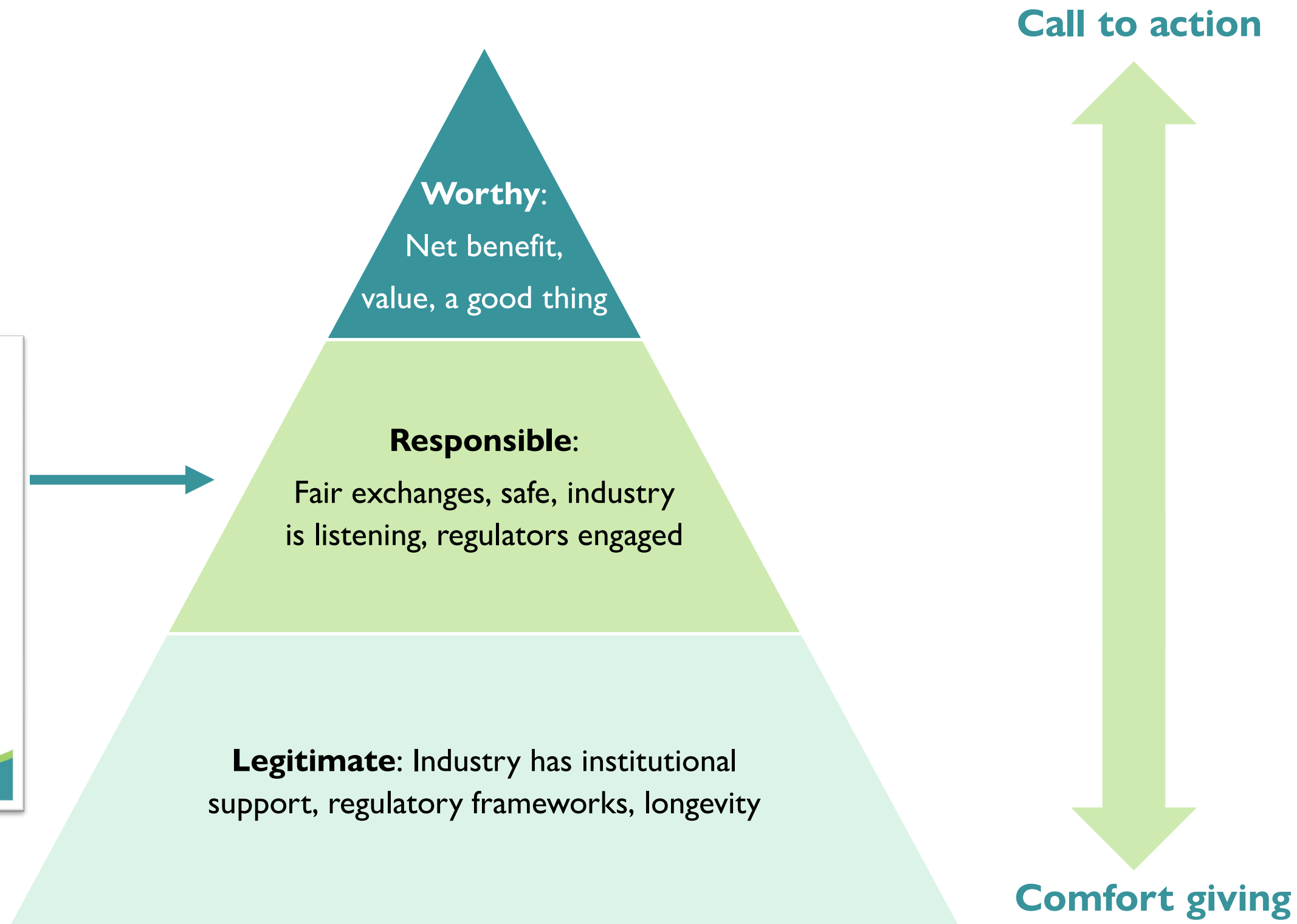
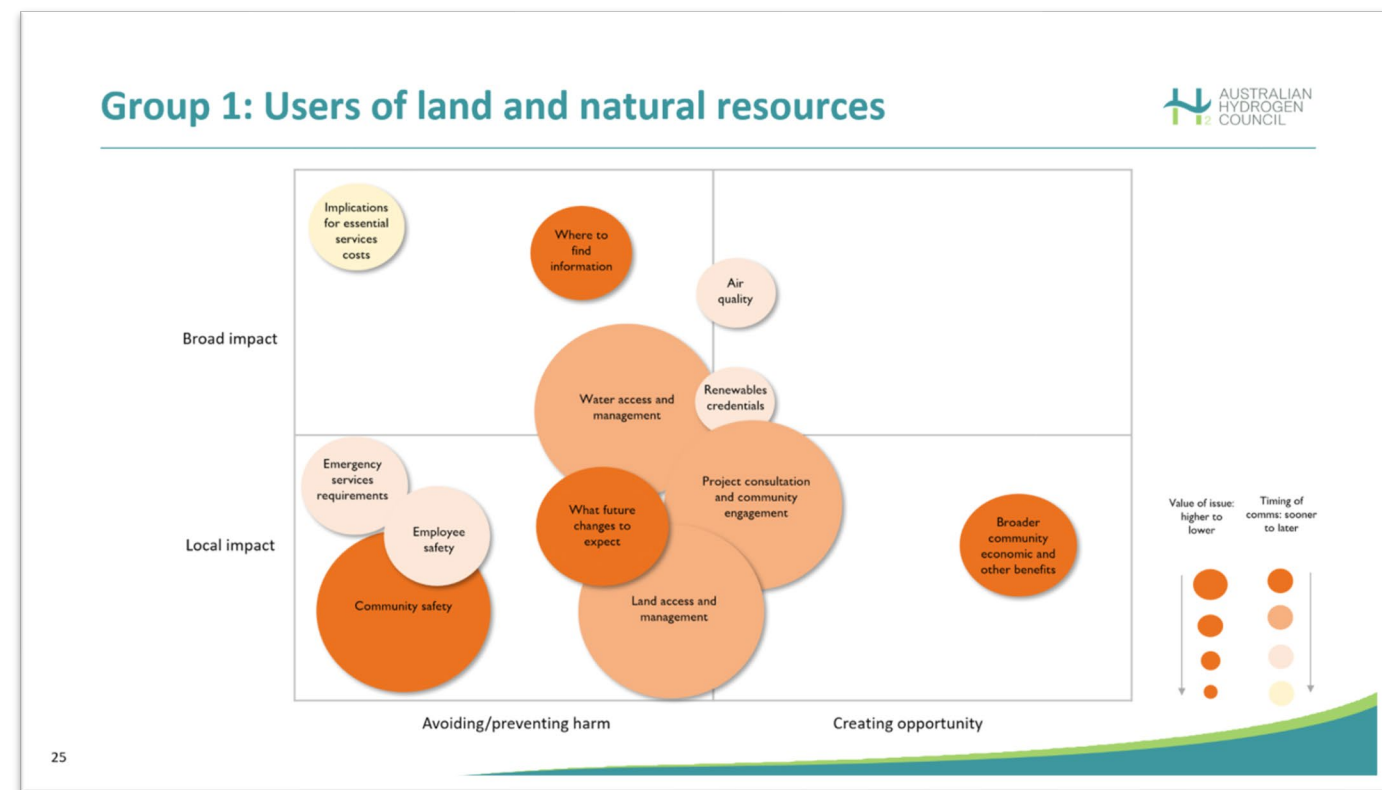
Group 6: Owners of outcomes



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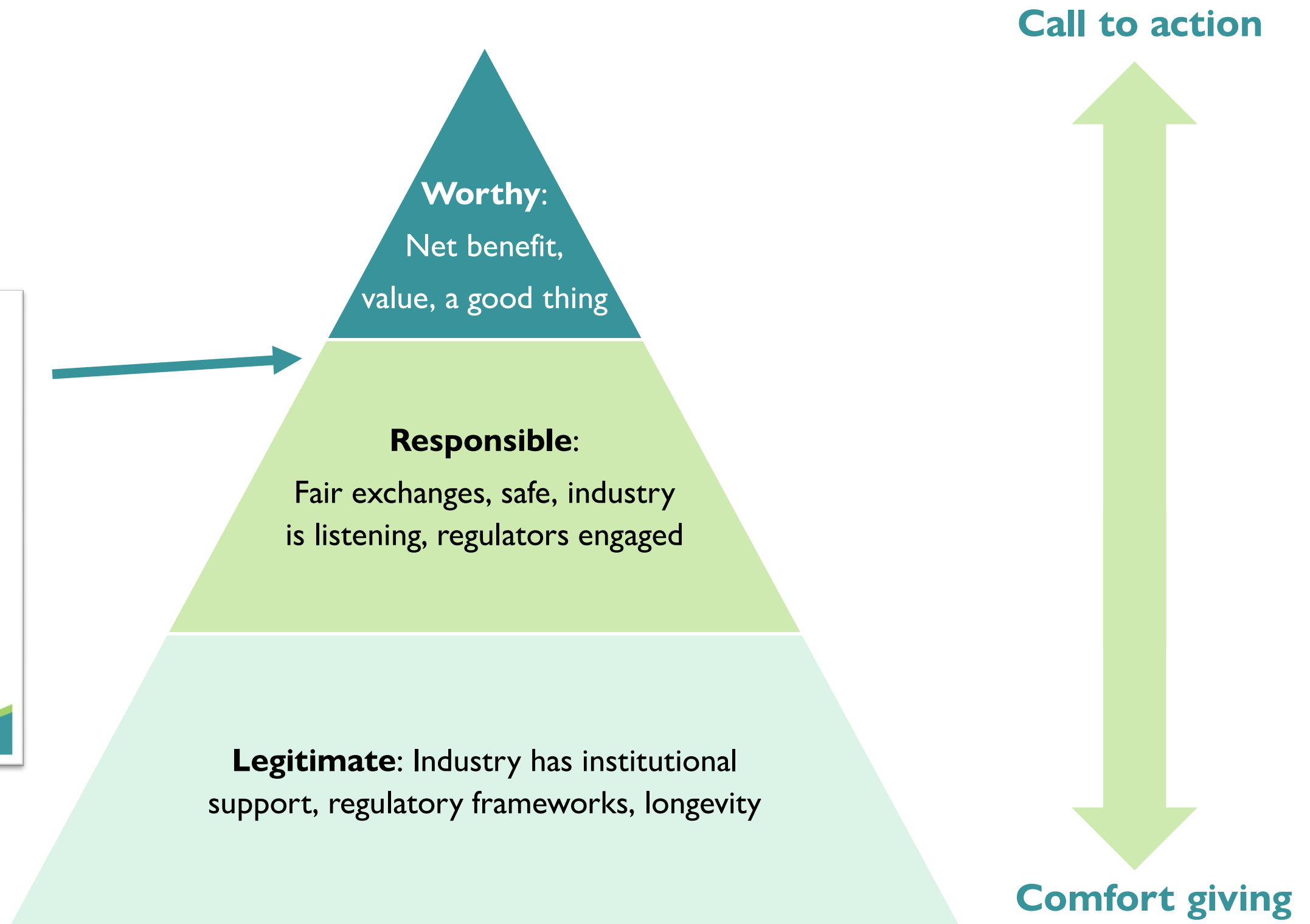
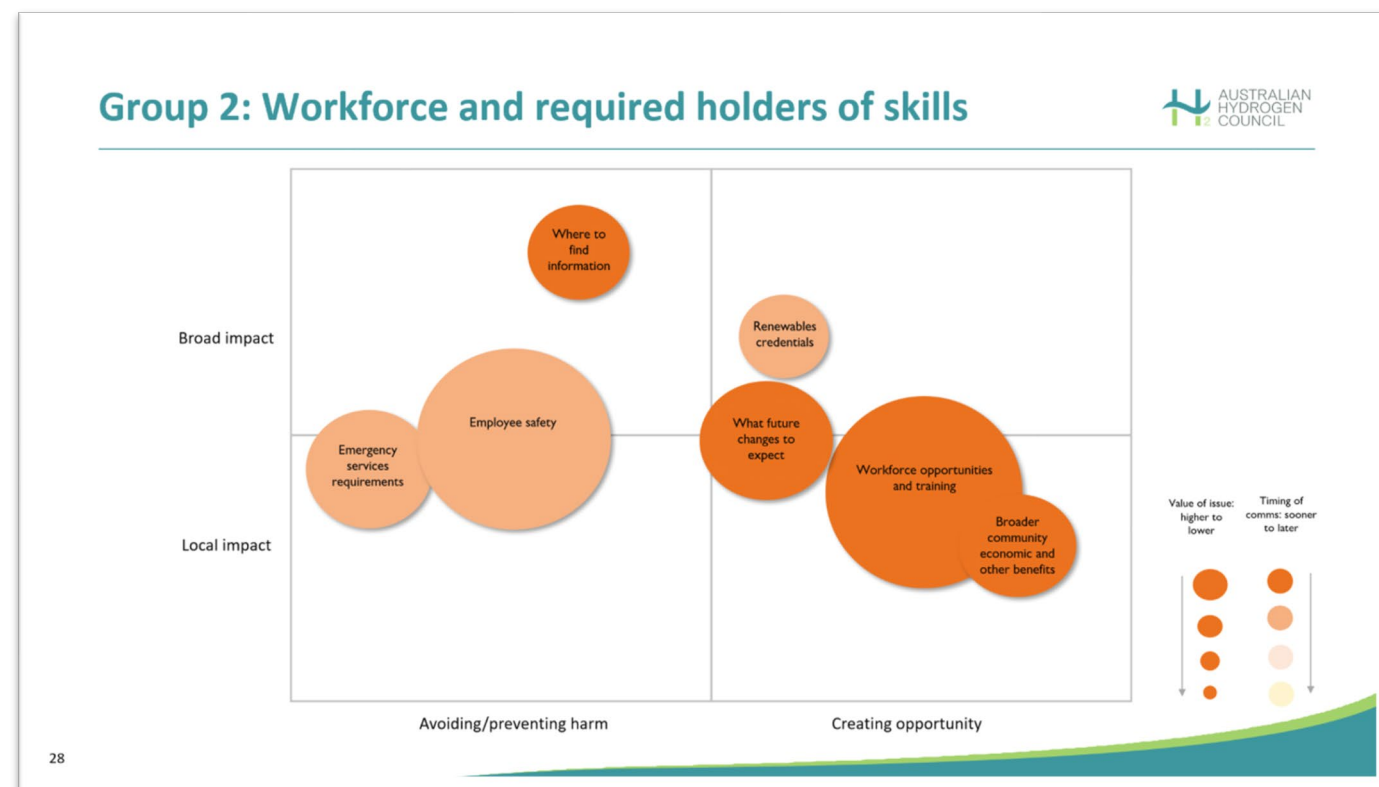
Orienting groups to hierarchy of messaging

For Group 1, this is largely about a **fair exchange**, and how we can communicate (truthfully) that hydrogen will **enhance/support regions** and communities, and **industry will learn from the past** (no harm). There is likely to be a need for significant awareness of perceived local impacts in actual communications – important to work closely with Groups 5 and 6 as relevant.

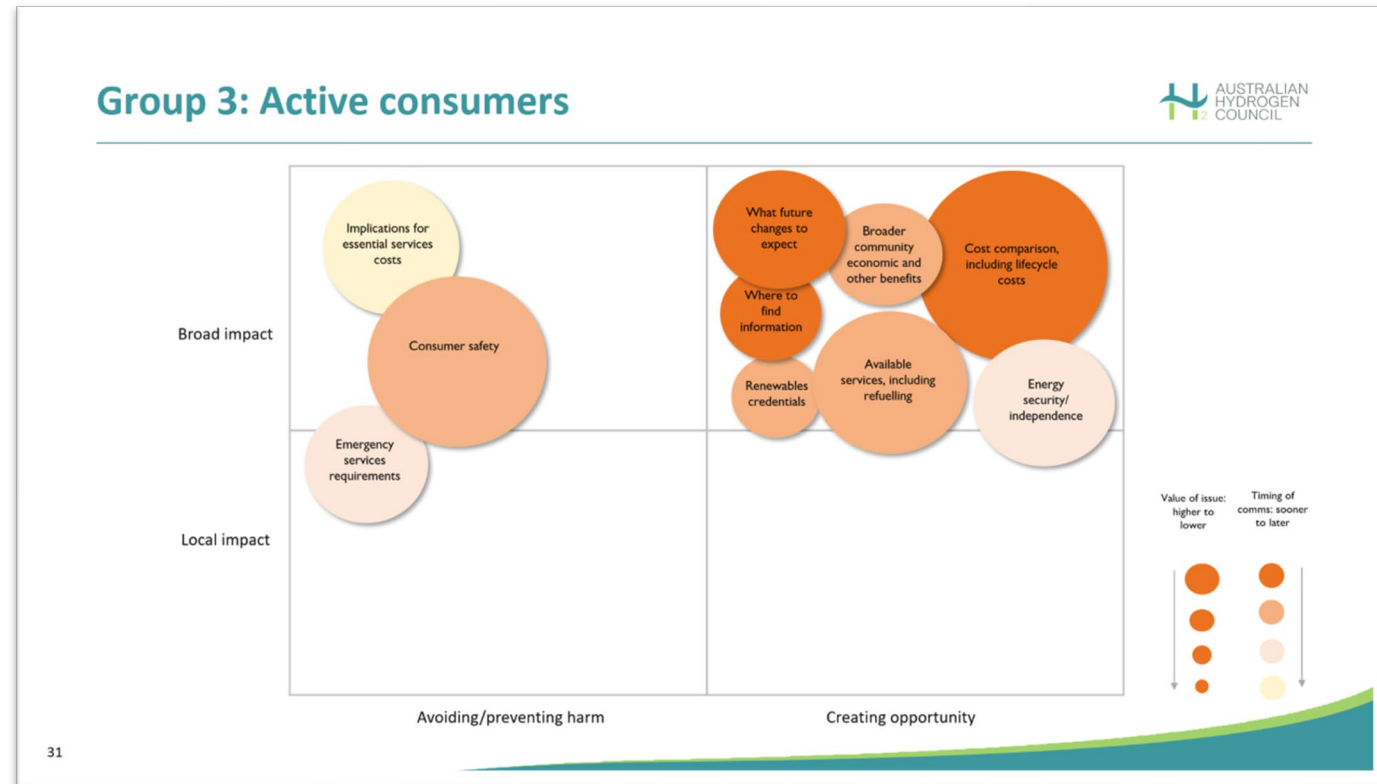


Orienting groups to hierarchy of messaging

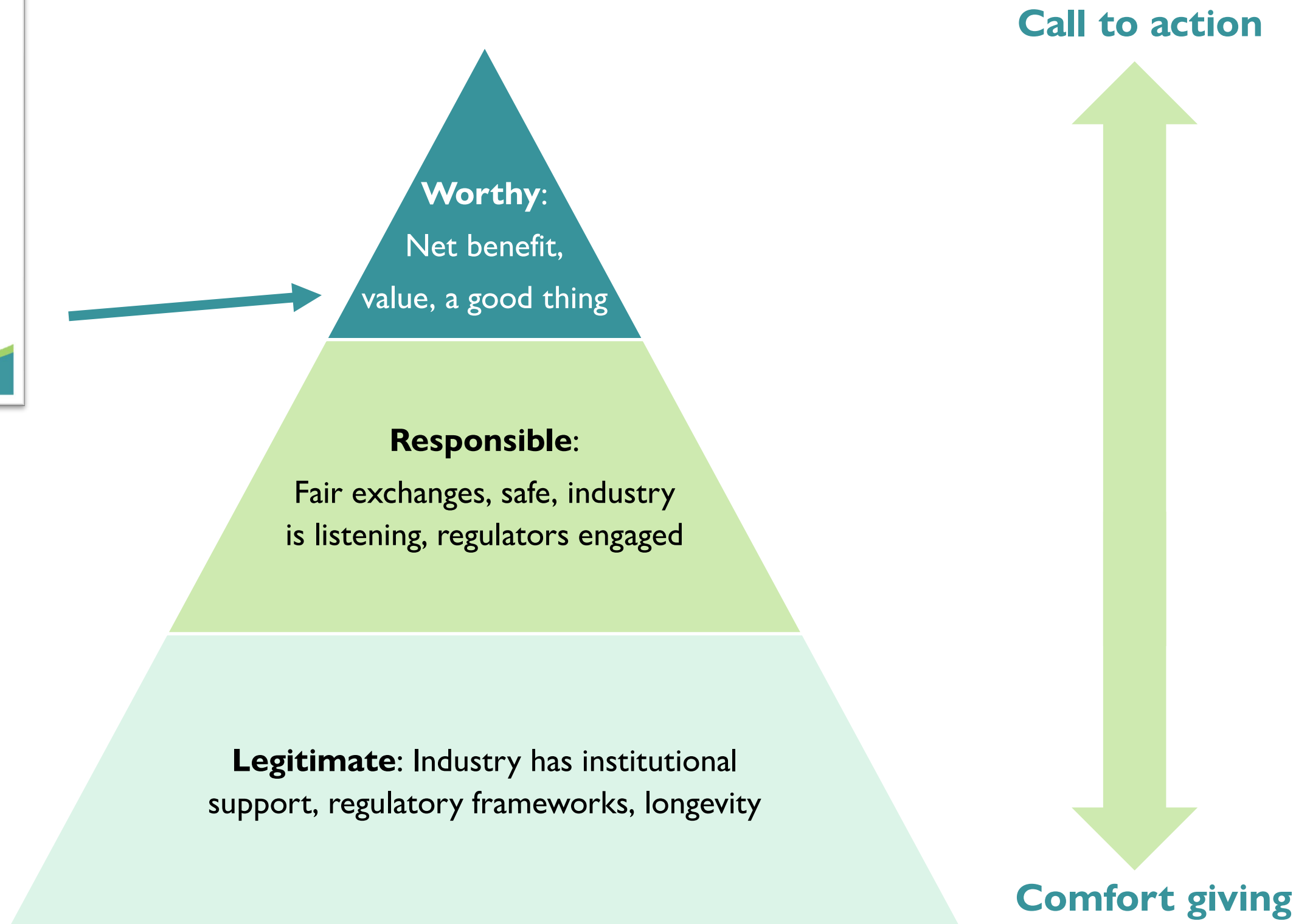
Similarly, for Group 2, this is largely about communicating **responsible growth**, where new (good) jobs are coming and people who handle hydrogen will receive training to stay safe. Communications will likely need regional/community details.



Orienting groups to hierarchy of messaging

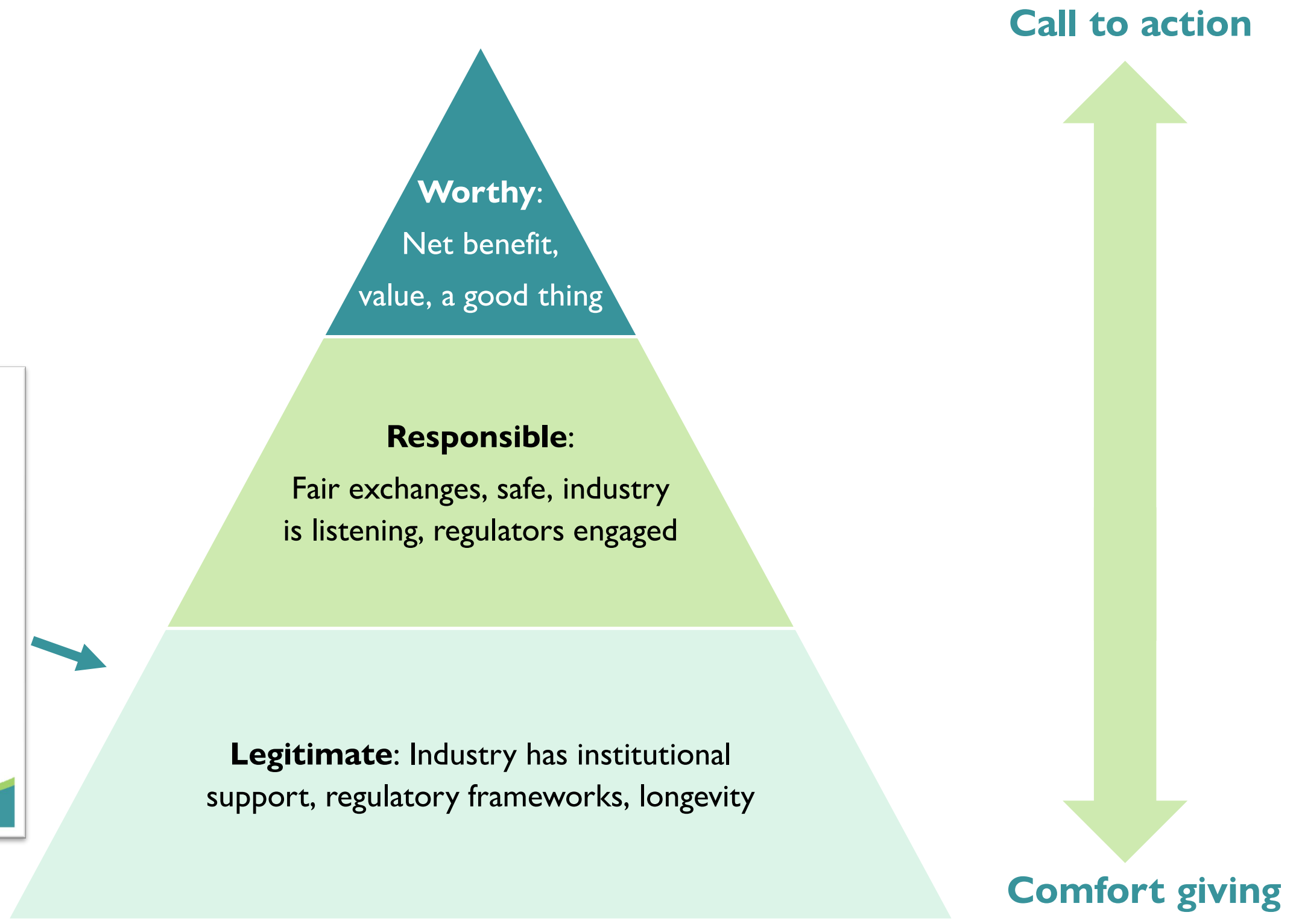
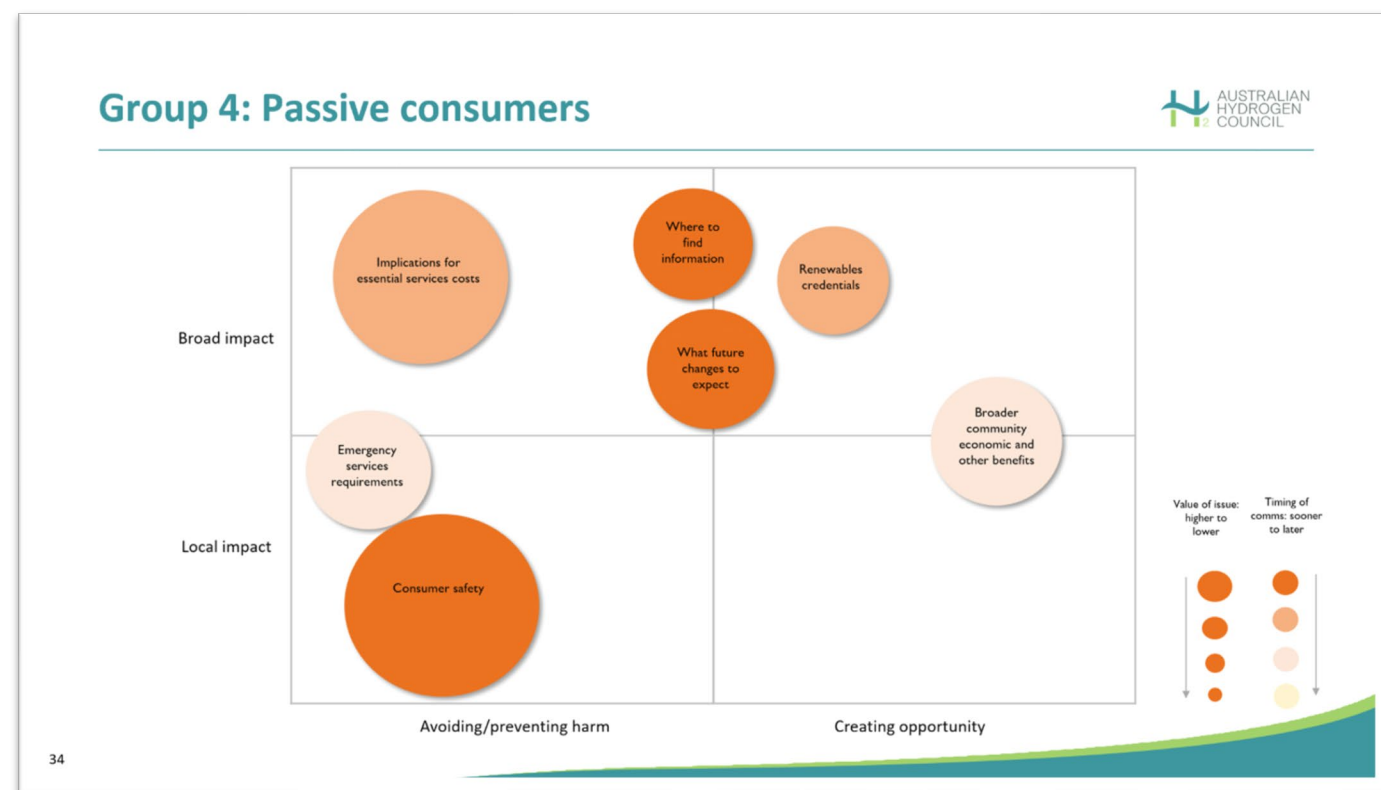


For Group 3, communications are about **value for money**, where hydrogen is a clean, safe and cheap alternative to traditional fuels; in the short term it might be more about the value of new clean technology. Most communications can be provided across communities, but will need to be specialised for jurisdictions as appropriate. Importantly, communications will need to be specialised for different market products and for industrial/business/domestic consumers.

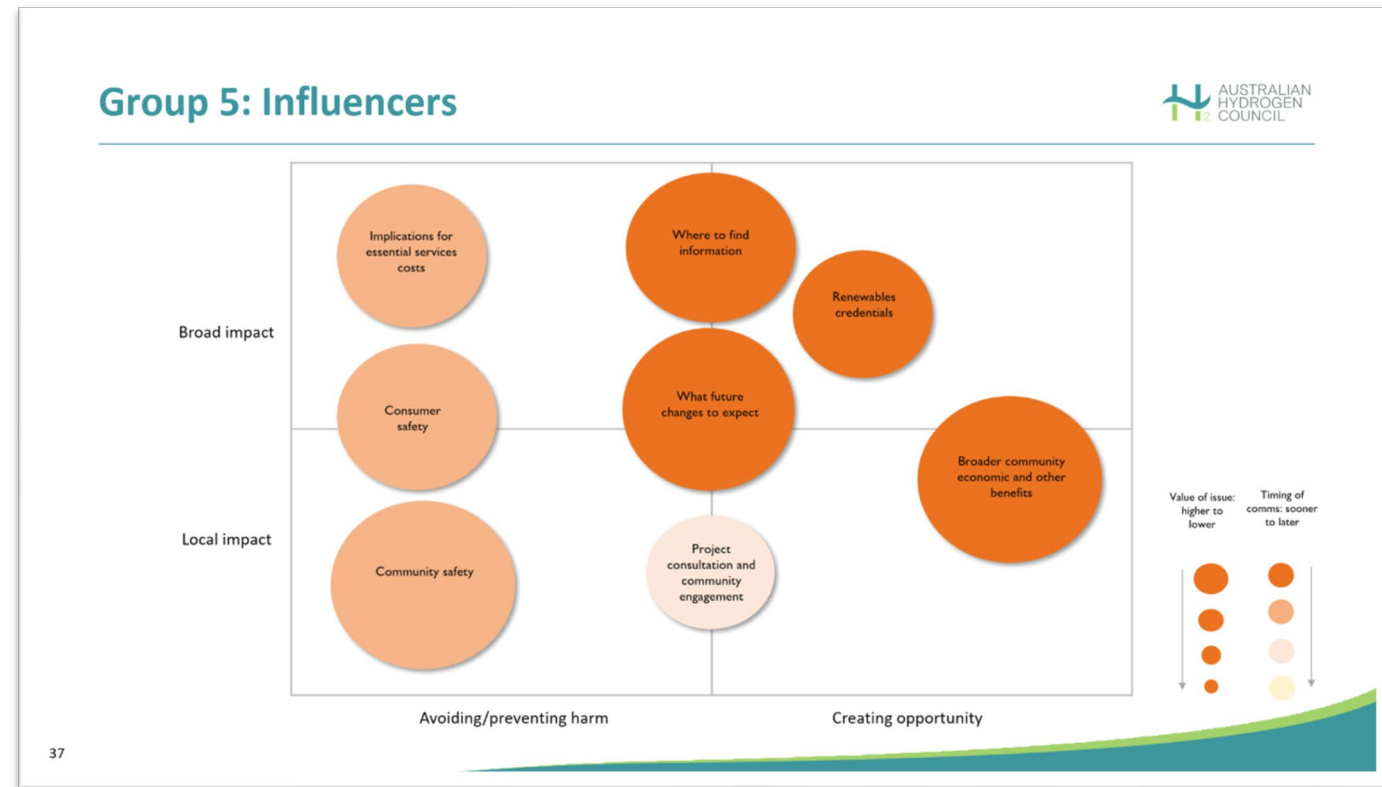


Orienting groups to hierarchy of messaging

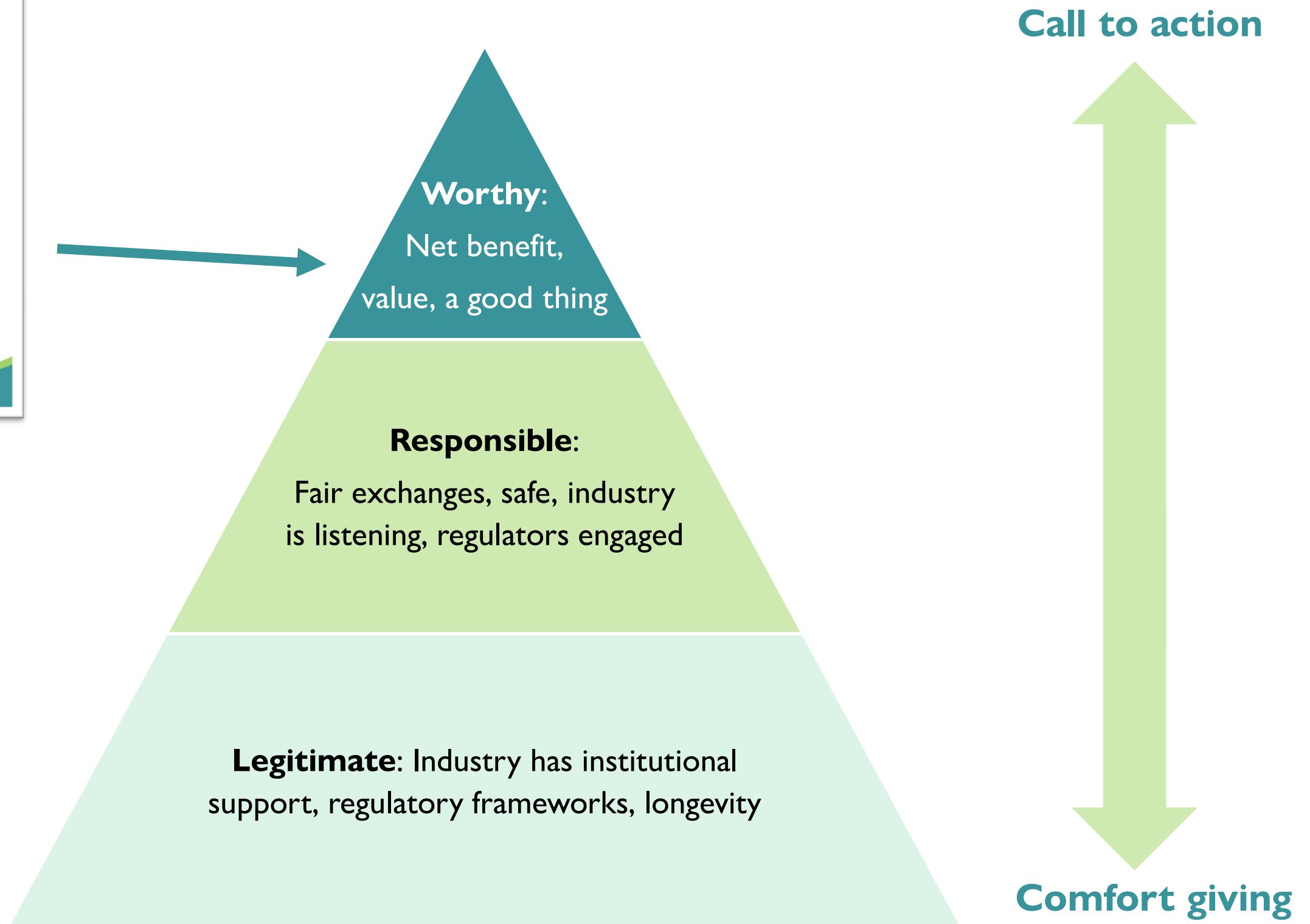
For Group 4, communications are about **reassurance**, where they advise that hydrogen won't cost more or negatively affect lifestyle. Most communications can be provided across communities, but will need to be specialised for jurisdictions as appropriate. Importantly, communications will need to be specialised for different services.



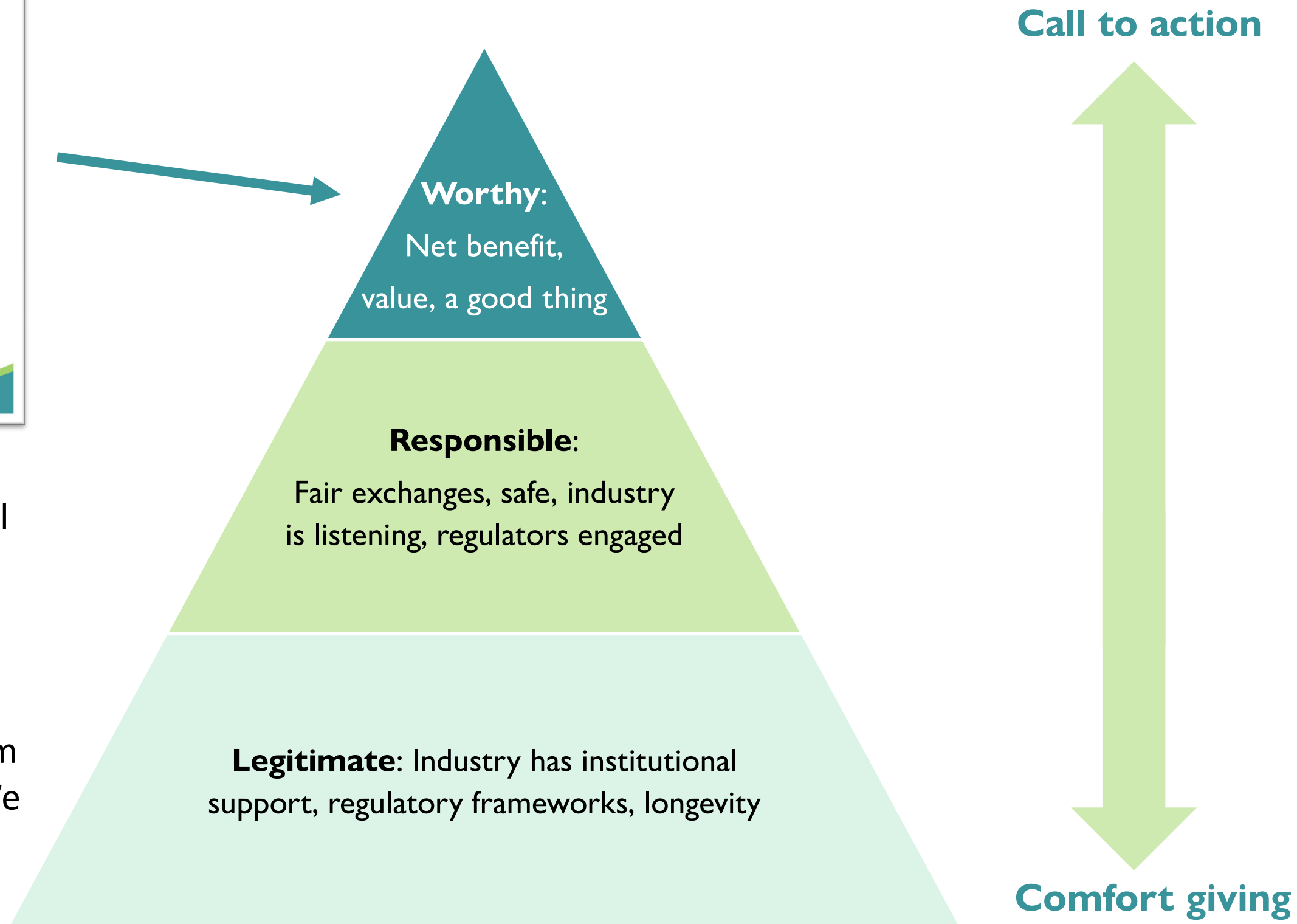
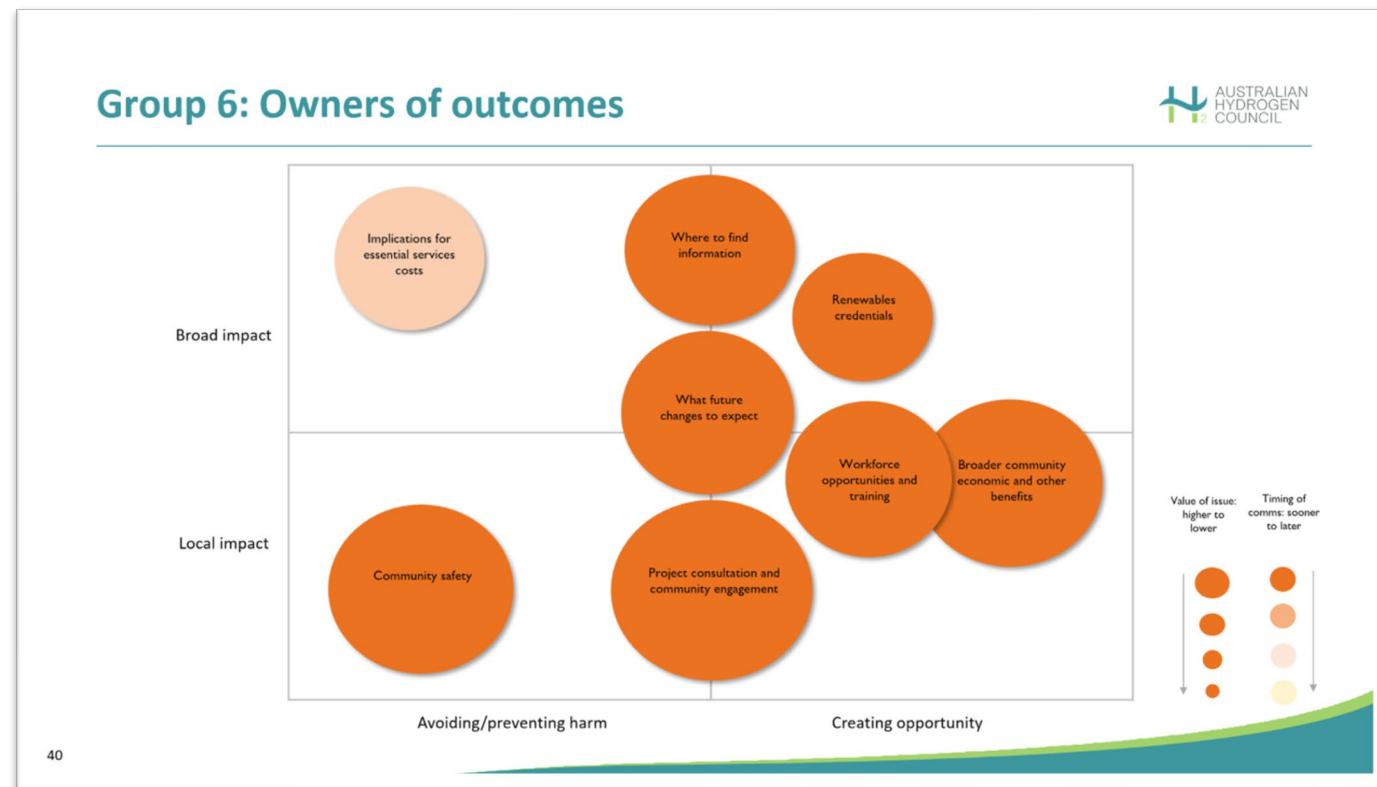
Orienting groups to hierarchy of messaging



Given the diversity of Group 5, will have spread of issues, and a spread of local vs broad. Overall, communications should support knowledge sharing by Group 5; this is about communications to support alliances, where we communicate that **hydrogen is worth using/supporting**, and there is at least an implicit call to action to support the industry.

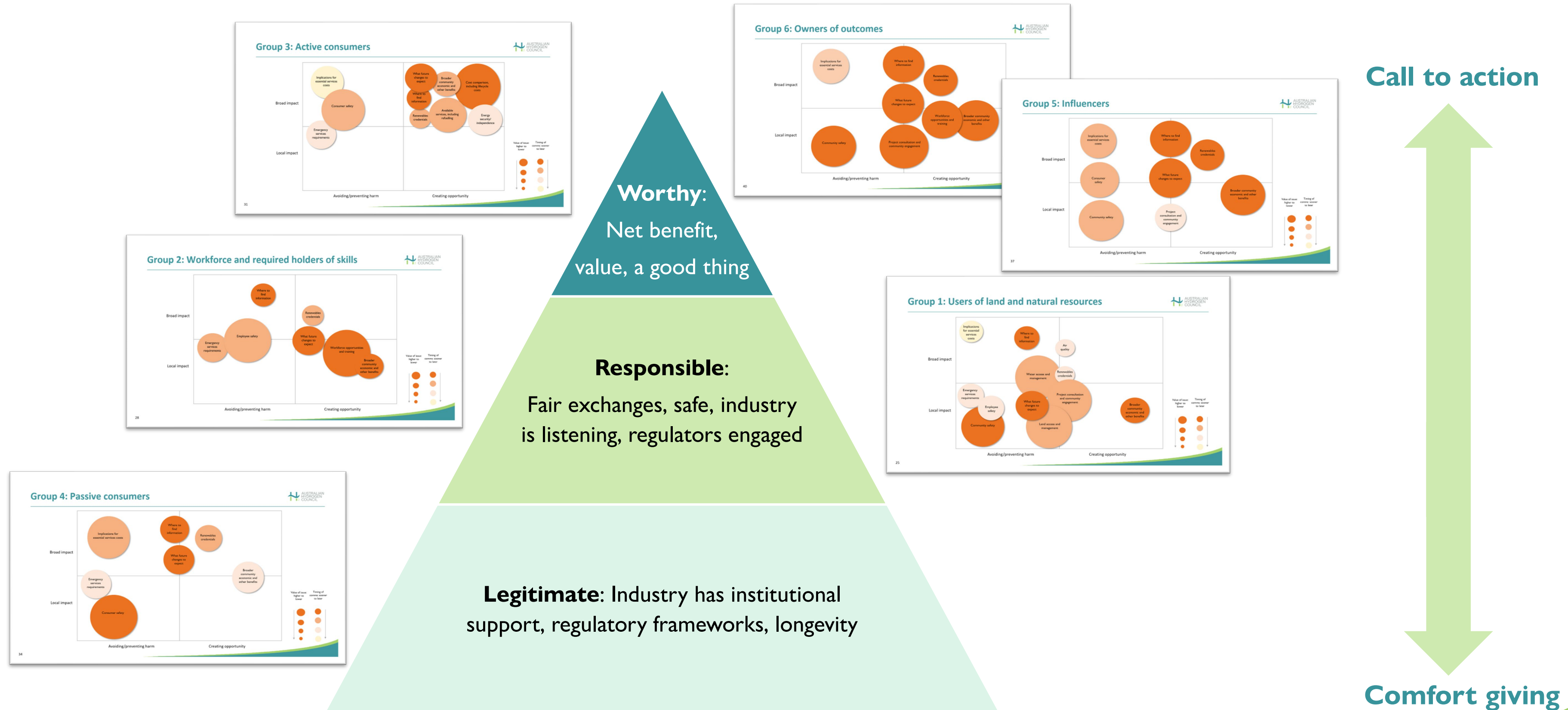


Orienting groups to hierarchy of messaging



For Group 6, communications cover the whole pyramid, all issues, and local and broad, but overall this is about communicating that the hydrogen industry **will provide benefit and fair outcomes**. Group 6 is composed of people and organisations who hold the power to grow the industry and to revoke actual (legal) licences. We need to help them feel informed and have no unwelcome surprises. We also want messaging to support Group 6 communications to their own stakeholders.

Orienting groups to hierarchy of messaging



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