

Retrofitting insulation in residential properties

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Retrofitting insulation in residential properties

How might the advice to landlords and homeowners be improved?

Research report prepared for

Building Research Association of New Zealand

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Abstract

A large proportion of New Zealand homes require insulation to enable them to be warmer, drier and healthier. There is a range of people in the market who provide information and advice to consumers about insulation with these people driven by a range of motivations from those who are selling products through to those who are providing impartial advice on insulation and whole of house solutions.

This multi-method, qualitative research sought to understand what factors homeowners and landlords (the consumers) need to know and take into account before they decide how they will improve the warmth and dryness of their residential properties. It also looked at the type and quality of information and advice provided to them.

The research found the key driver of consumer choices is the cost of the insulation, i.e. its price weighed up against affordability and the benefits expected while they live in or rent their property. However, this was not the main focus for those providing information and advice which was on compliance, product information and benefits.

There is no career or qualifications pathway for those working solely in the insulation field and this may contribute to advisers not being fully equipped to provide information and advice to consumers. Apart from Home Performance and Eco Design Advisers, the training provided to those in the insulation industry is seemingly minimal and reliant on individuals reading about products and standards, yet the knowledge required to inform consumers about the best solutions to bring about a warm, dry, healthy home is reasonably expansive and technical.

The policies that determine the "minimum" standards for insulation drive adviser and consumer behaviour yet these can be complicated and inconsistent. There is an opportunity to improve the current insulation environment through policy change in relation to insulation standards, training and qualifications for advisers, and standardised information for consumers.

Introduction

The need to improve the warmth and dryness of existing residential dwellings has been brought to the attention of homeowners, landlords and the public through public policy initiatives such as the *Warm Up New Zealand: Healthy Homes* (WUNZ) advertising campaign. The first step in making such improvements is widely recognized as the installation of insulation. Over the last 20 years governments have invested in campaigns to encourage the installation of insulation and provided subsidies for households and landlords to retrofit insulation into residential dwellings.

However, in spite of such promotion and policy initiatives, it is not well understood from where homeowners and landlords seek information and advice when they want to improve the warmth and dryness of their residential properties. Nor is it well understood whether the information and advice provided to consumers is meeting their and good practice expectations.

Therefore, the primary purpose of the research is to get a better understanding of this so findings can be used to improve the information and advice available to support consumers' decisions to retrofit insulation. This includes the appropriateness, relevance and accessibility of information and advice to support the best decisions and take the most appropriate actions to improve the warmth and dryness of New Zealand residential properties. At the point that property owners may be deciding to retrofit insulation, there may be no or some insulation in the dwelling (but less than current requirements to achieve H1 of the New Zealand Building Code). Given this, "exceeding the minimum" in this context means the retrofit of any level of insulation by the consumer above the current level in the dwelling.

This research provides findings on a range of factors associated with both the supply and demand sides of the insulation market, including:

- from whom consumers seek advice, where they obtain that advice, and what they do to improve the dryness and warmth of their houses
- the quality and credibility of advice consumers receive from people or written and audio visual materials
- the factors consumers take into account when they make insulation decisions
- the barriers to educating consumers and supporting industry to understand and promote the benefits of retrofitting home insulation in existing housing stock.

The current state

There are two key reasons why this research is important. Firstly because of the state of the housing stock in New Zealand and the scale of the work that will be required to make all homes warm and dry. This factor is also compounded as those living in the poorest quality housing are more likely to have high energy bills, high doctors/health costs and more days off work due to illness, along with a higher probability of earning less or being without work. As such there is a significant group who are less able to afford the costs of insulating their homes.¹ That said, advertising campaigns have been successful at building acceptance amongst consumers about the health benefits of insulation. Next perhaps is the need for messaging around the impact insulation can have on heating and household costs.²

A second reason for this research is because the current variance in recommended insulation standards that are required in different regions in New Zealand, between new-builds and retro-fits in

¹ See: Dr Ralph Chapman, Associate-Professor Philippa Howden-Chapman, & Des O'Dea. *A cost-benefit evaluation of housing insulation: results from the New Zealand 'Housing, Insulation and Health' study*. October 2004. And Mark White. *Health benefits of insulation and heating*. HRC News November 2012.

² Business NZ Energy Council. 2017 Energy Briefing & World Energy Council. World Energy Issues Monitor 2018 – New Zealand.

rental properties cause some confusion and may contribute to poor compliance with standards. (See Table One below where standards are outlined.) Aside from recommended standards the lack of regulatory requirements or consistent checks for ceiling and underfloor retrofits of private homes also means information and advice are important for enabling consumers awareness.

In terms of the scale of the issue, recent research shows 830,000 New Zealand houses are not up to insulation standard.³ Just under half of houses (47 percent) have less than 80 percent coverage of 120mm insulation in the roof space. Just under one-fifth of houses (19 percent) have less than 80 percent coverage of subfloor areas. Combined this suggests over half of houses (53 percent) could benefit from retrofitted insulation in the roof and/or subfloor space. This is a significant proportion of the 1.82 million total private dwellings (with 1.155 million owner-occupied, 605,000 rented and 68,500 provided free).⁴ And this is in spite of governments providing subsidies to eligible house owners to retrofit insulation for more than 20 years.

New Zealand Standards

New Zealand Standard 4246:2016 outlines methods of installing insulation products in common residential light-timber and steel-framed construction types. The standard covers both the installing of insulation in new buildings during construction and the retrofitting of insulation in existing buildings. Building consents are required for the construction of new houses, for home renovations and for the retrofitting of insulation into the external walls of houses. However, there are no regulatory requirements for the retro-fitting of insulation in ceilings or underfloor in an existing owner occupied dwelling.

All construction work on houses, including installing or retrofitting insulation is expected to comply with the New Zealand Building Code (NZBC). Where insulation is retrofitted however NZBC requirements for durability, protection from fire, moisture transfer and electrical safety must be complied with, but NZBC requirements for energy efficiency and internal moisture do not apply, which means there is no minimum level of insulation that shall be retrofitted. It is still recommended in NZS4246:2016 that as much insulation as practicable is installed, and that where existing insulation is removed, it shall be replaced with insulation of equal or better performance.

There are minimum standard insulation requirements for landlords (from July 2019) set out in the Residential Tenancies (Smoke Alarms and Insulation) Regulations.⁵ These require minimum levels of ceiling and underfloor insulation to be present in rental properties. The regulations also specify the minimum R-values for the insulation products being installed.⁶ Installations in rental properties are also required to meet NZS4246:2016.

³ White, V. & Jones, M. (2017). *Warm, dry, healthy? Insights from the 2015 House Condition Survey on insulation, ventilation, heating and mould in New Zealand houses*. BRANZ Study Report SR372. Judgeford, New Zealand: BRANZ Ltd. Page 1.

⁴ Statistics NZ, June 2017 quarter, Mean year end estimates (includes stand-alone houses, apartments, town-houses and retirement village units)

⁵ Under the Residential Tenancy (smoke alarms and insulation) Regulations (2016) landlords must disclose whether there is insulation in the ceiling and under floor in a rental property. From 1 July 2019 ceiling and underfloor insulation must be installed, where it is reasonably practicable to install. It must comply with regulations and be safely installed. Where insulation has been installed before July 2016, the insulation must be in a reasonable condition and achieve at least the minimum R-value when installed of R 0.9 for underfloor and R 1.5 (Masonry) or R 1.9 for timber-framed dwellings and be at least 70mm thick. If there is no existing insulation or it has been installed post July 2016, the minimum R-values are R 1.3 for underfloor and R2.9 for the majority of the North Island or R3.3 in the Central North Island and South Island.

⁶ An R-value is the value of thermal resistance of a building element. It is determined by calculation or measuring the temperature difference between the internal air and the external air on either side of the building component, when there is unit heat flow in unit time through unit area. (NZS4246:2016, Pg 8). The higher the R-value the more effective it is at preventing heat loss.

Table One: Minimum recommended R-values for retrofitting insulation in existing homes/rental properties

Minimum recommended R-Values for existing homes	North Island (excluding Central Plateau)	South Island and Central Plateau
Ceilings with no insulation, or up to 75mm of existing insulation	R2.9 blanket or R3.4 segment insulation (home and rental installed post July 2016) Rental installed pre July 2016: R1.5 or R1.9	R3.3 blanket or R4.0 segment insulation (home and rental installed post July 2016) Rental installed pre July 2016: R1.5 or R1.9
Ceilings with 75-120mm of existing insulation	R1.8 blanket insulation	R2.4 blanket insulation
Underfloor insulation	R1.4 Rental installed post July 2016: R1.3. Installed pre July 2016: R0.9	R1.4 Rental installed post July 2016: R1.3. Installed pre July 2016: R0.9

Source: EECA, RTA Regulations (2016)

While the minimum requirements and guidelines provide the lowest level/type and installation standard to meet a minimum performance standard, the merits of exceeding this standard, and what precisely may contribute to improved performance is not clearly articulated or regulated.

Installation

There are also few checking or audit process that may verify that installation has been completed to quality guidelines. Insulation that is retrofitted can be installed in ceilings and underfloor by anyone. Homeowners/landlords may do this themselves, they may contract a tradesperson, a friend or family member, or a professional organisation to complete the work. There are no requirements for a certified professional to assess the work to ensure a minimum standard of performance, to ensure a correct product is used or to provide any assurance of correct installation to even minimum standards.⁷

Some insulation companies do audit some or all of their installations and audits are carried out on a proportion of homes where subsidies from WUNZ are accessed using a transparent quality assessment requirements. Building inspectors are also required to inspect consented installation of insulation (as part of renovations or in external walls).

Aim

This research set out to answer two key research questions.

- What is the credibility and the skills base of those who advise consumers about insulation installation and minimum standards?
- What are the opportunities for enhancing the education and skill base of consumer advisers to improve the warmth and dryness of New Zealand homes?

The research questions were answered through data gathered from the following key sources:

- *Industry Stakeholders*: phone or face-to-face interviews with 15 industry stakeholders;

⁷ Rooves and underfloor spaces may be poorly lit, have limited room to move and contain a range of hazards. DIY installers need to be aware of risks to themselves and building occupiers when installing insulation. For example: falls through ceilings, heat exhaustion, electric shock, insect bites and stings, and sharp objects to name a few. For more information on risks and what to do see Appendix B of NZS 4246 'Energy Efficiency – Installing Bulk Thermal Insulation in Residential Buildings' available for free at <https://www.energywise.govt.nz/at-home/insulation/installing-insulation/new-zealand-standard-for-installing-insulation/>, or seek professional advice.

- *Advisers*: an online survey with 39 people who are involved in some part of the industry and provide information and advice to consumers about insulation;
- *Consumers*: phone or face-to-face interviews with 14 consumers who have retrofitted insulation.

Industry stakeholders are those who have a range of roles that may influence the market and its operation. They may be regulators, information providers, peak bodies.⁸

Those *providing* relevant information and advice (advisers on the supply side) include:

- Government agencies through their websites and other information platforms e.g. MBIE sites concerning building regulation and standards (<https://www.building.govt.nz/building-code-compliance/h-energy-efficiency/h1-energy-efficiency/>), tenancy services (<https://www.tenancy.govt.nz/maintenance-and-inspections/insulation/>), and smarterhomes (https://www.smarterhomes.org.nz/tools/#jumpto-heating_002c-cooling-and-insulation2); EECA through Energywise advertising and their website (<https://www.energywise.govt.nz/at-home/insulation/>, <https://www.energywise.govt.nz/https://www.energywise.govt.nz/funding-and-support/funding-for-insulation/>)
- BRANZ websites and research (https://www.branz.co.nz/cms_display.php)
- Product information from insulation manufacturers and provided through websites and brochures e.g. <http://www.autexindustries.com/greenstuf/residential/>, <http://www.bradfordinsulation.co.nz>, <https://pinkbatts.co.nz>,
- Product retailers in store face-to-face;
- Qualified Home Performance Advisers (HPAs) through websites, brochures and face-to-face (<http://www.beaconpathway.co.nz>);
- EcoDesign Advisers (<http://ecodesignadvisor.org.nz/>);
- Insulation installation assessors and companies⁹ through websites, brochures and face-to-face as assessors, installers and auditors (e.g. <https://www.iaonz.co.nz>);
- Local authority building inspectors where regulatory compliance is required;
- Property investors and managers; and
- Informal advice through friends, family members and the media.

Those *seeking* information and advice (consumers on the demand side) are home owners, landlords and potentially tenants. These groups are seeking information and advice in order to make (or promote) decisions about retro-fitting insulation. For this research 14 consumers were spoken to.¹⁰

A full description of the methodology can be found in Appendix One.

Findings

This section of the report describes the findings of the research based on the data gathered from the three sources: industry stakeholders (stakeholders); those who provide information and advice about insulation (advisers); and consumers who have retrofitted insulation.

Who gives advice and how consumers get this

The insulation market has, as all markets do, a supply and demand side. On both sides there is a range of players with different roles, different drivers and different levels of knowledge.

⁸ The stakeholders interviewed for this study are outlined in Appendix One.

⁹ Some installation companies use independent contracted assessors.

¹⁰ A description of the location and household composition of consumers is included in Appendix One.

The online survey conducted was of advisers (the supply side of the market) working in the insulation industry. The sample of 39 people provide advice directly to consumers. The respondents are engaged in a range of roles in the industry: retail (9), installation (16), inspection (11), building (2), eco-design (4), and home performance (5).¹¹ Five of the respondents said they were involved with a combination of retail, installation and inspection. It is therefore not possible to differentiate between information and advice provided from distinct sectors of the industry.

Product manufacturers have quite a significant role in also informing this market but do not provide advice. There are however a number of assumptions made in the market in regards to the information supplied and about insulation products. These include: that the product labeling is correct in regards to the R-value of the insulation product; and that the product materials are correct. As retailers and installers often supply only a small number of products and are likely to recommend consumers use stocked product A or B, which may not necessarily be what is best for their situation, there is a degree of information asymmetry, particularly as advisers can depend significantly on product supplier information.

Understanding consumer experience

On the demand side are consumers who have their own individual drivers for retrofitting insulation. Homeowners and landlords tend to vary in this regard, although less so for social or hapu-based housing where occupier needs may be considered more fully. With the sample in this research, living in cold houses and the desire to be warmer was the most common reason the consumers gave for getting the insulation. Here 13 of the 14 consumers interviewed said being warm was their main driver.

We bought a 100 year-old cottage in Whanganui. It had no insulation. The first thing we wanted to do was to make it warmer.

The house was freezing - so we did it for warmth. Also there was no heating... We knew when we bought the house that we would have to do it.

When it came to the decision to choose insulation, cost was a key consideration. Here this meant the offer of subsidies for insulation and the potential to keep heating bills lower. Eight consumers provided this as a reason for why they insulated their houses.

The opportunity for the subsidy so affordability was the big prompt – it was rented out at the time. I was going to anyway for health, warmth, efficiency, but the partial subsidy was the big thing.

We wanted to try and keep the house warmer and for comfort as well and save power in the long run. We have gas central heating - so the heating is not going out the door.

In this sample of consumers, health as a driver for insulation appears to be associated with those who have conditions that are impacted on by living in cold or damp homes. Three consumers commented on this, two of whom have adults living in the house with asthma and one who had had a sick child.

We'd been advised by the hospital after [son then 2yrs old] had been in hospital with pneumonia that the house needed to be warmer and drier. So we put in an HRV. At the same time we had a visit from Wellington Regional Council who were promoting insulation - and that it could be paid off through rates. But the main thing was [son's] health.

Having a healthier home was certainly a consideration. My partner has asthma and we had crying windows constantly.

¹¹ A description of who the survey was sent to is included in Appendix One.

Before starting the insulation process, the consumers were on a continuum of knowledge about subsidies, insulation, R-values, the types of insulation, and how it is installed. The consumers ranged from no experience with insulation through to those who were doing it as part of an ongoing insulation / renovation process and also included someone who was renting and two landlords. The vignettes below show the two ends of this continuum.

M is a first-home owner, who said she just knew that insulation helps keep you warm and that it cost a lot of money. She knew there were some different ways to do insulation, for example she would have liked to put expanding foam into the walls but didn't do this as they had already started to paint their house and didn't want to make holes in the newly painted exterior. While M took advice from her father, she said she knew nothing about minimum standards and R-values. M installed underfloor insulation as the house had wooden floors and the ceiling was already done.

J had had previous experience with retrofitting insulation. When doing that he had looked at the EECA guidelines and read about R-values. He said he didn't want to use fibre glass as he thought polyester was a less toxic product. J also knew about the installation process and importance of getting 'a snug fit'. However he admitted that while he probably didn't get the ceiling up to standard, he was complemented by installers on how well he'd put the vapour barrier in under the house.

Given the varying states of their knowledge the 12 who felt they required information used a variety of sources, with most of them using more than one source.

Figure One: The plethora of information and advice sources



These sources included: family / friends (5); retailers (people, pamphlets, videos) (5); installers (4); BRANZ (2); EECA (1); and council (1). Of note here is the extent to which advice is being sought from those who have previous experience (and may or may not know what is best) and those who are in the business of selling and installing products.

While the sample of consumers is small it does indicate that those who are going to install insulation are not always going to sources that can be deemed fully impartial. For example, M said she/he just

took the advice of the people (installers) who came to the door as they appeared to know what they were talking about. She/he didn't think they were pushing different products as they just recommended one type that would best suit the under floor insulation that was to be done.

On the other hand C used a number of sources, including websites and talking to friends who were installing insulation. She/he also felt she/he got really good advice from the Sustainability Trust in terms of the range of options that were possible for them. In addition to this C contacted the company that built the house and a builder for further information.

Of particular interest was the extent to which most of these consumers were prepared to research to find out what they should do. This research ranged from consumers who talked about "googling" and "doing a bit of research":

I was aware the subsidy was potentially going to end so wanted to make sure we could get it while we still could. I did a bit of research ... and was introduced to the kaupapa of the subsidy. I was also looking for something that was economical and environmentally friendly.

Through to those who talked about research as a deliberate and proactive approach they used:

[Partner] knew about different ratings - so we got the highest rating. He knew about ratings as he researches stuff - finds stuff on the internet. We got the highest rated stuff as we got the impression it was better.

I used the BRANZ website, I think, about R- values for ceiling and walls and made sure we were over spec as there was little difference in cost for going above for the increased benefits. Increased thermal resistance helps prevent heat loss. But would have gone with minimum based on the information on the BRANZ website.

What this shows is that consumers have different drivers for considering insulation and bring different background knowledge and experience to finding out about insulation solutions. They will take different approaches to find out about the most appropriate products to use, and how to install them, and commonly use multiple sources of information. In short, they learn along the way. As such there is not 'one consumer pathway'. Given this, information and advice needs to be provided in a simple way that is accessible in a range of modes. There is further comment on this in the discussion section of the report.

Specialist support to landlords

The stakeholders interviewed added additional understanding from a property investment perspective. Here, due to impending regulatory requirements there is significant targeted information available to landlords about the regulations and the availability of subsidies.

This targeted information, particularly from Tenancy Services and EECA, is informing people about what they need to do and by when in order to meet their obligations as landlords. It also outlines available subsidies and the rights and obligations of tenants.

This information is also being directed to property owners through their federations and property management companies. Installation company partnerships with property managers and retailers are also assisting this market with making insulation installation easier to progress through discounted insulation products and free quotes.

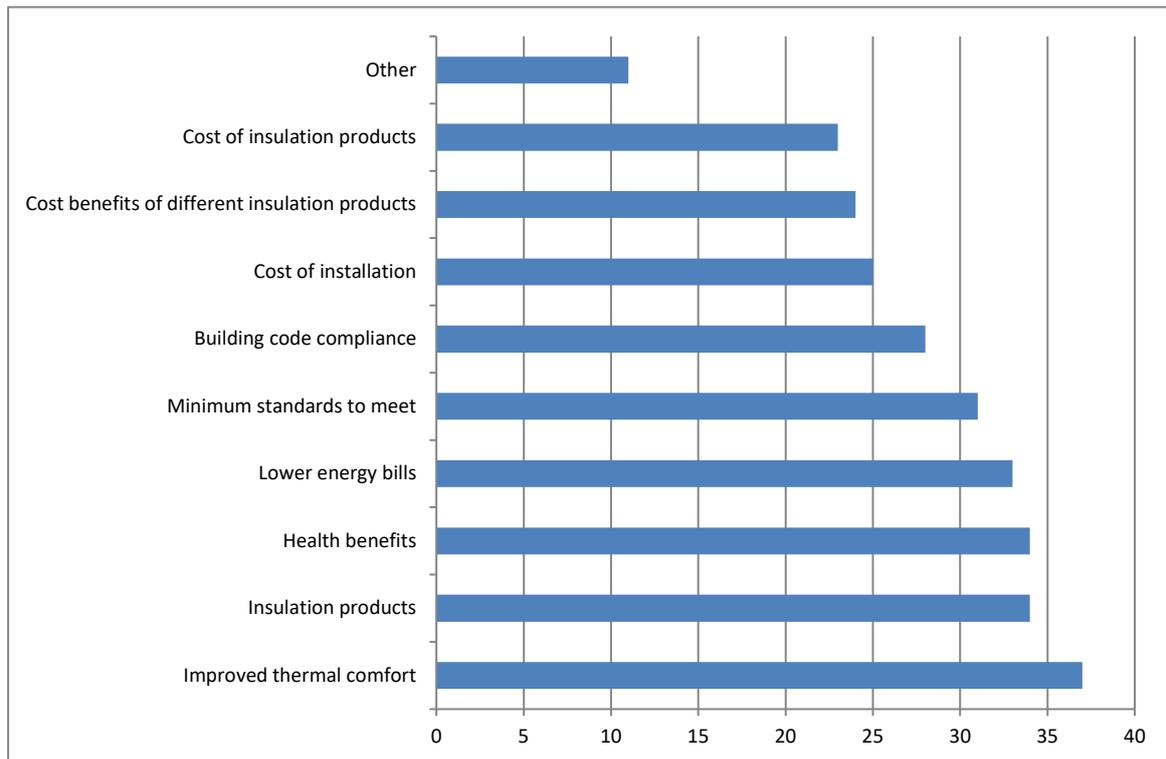
What type of advice is being given and sought

As described, consumers with different drivers and levels of knowledge are going to a variety of sources for advice. But what type of advice and information are they getting from the supply side of the market and what drives the choices they make?

The advice being given

Based on a list of options provided to them, the advisers surveyed said they provide information that is a mix of costs/prices and the range of benefits arising from insulation in terms of comfort, health, and reduced energy costs. Nearly two-thirds of those who advise on insulation products suggest they also highlight the cost benefits of different products. Those who responded in the 'other' category (11) mentioned whole of house implications, going above standard, environmental choices, and information about dealing with moisture. See figure Two below.

Figure Two: Information and advice provided to consumers by advisers (n=37)¹²



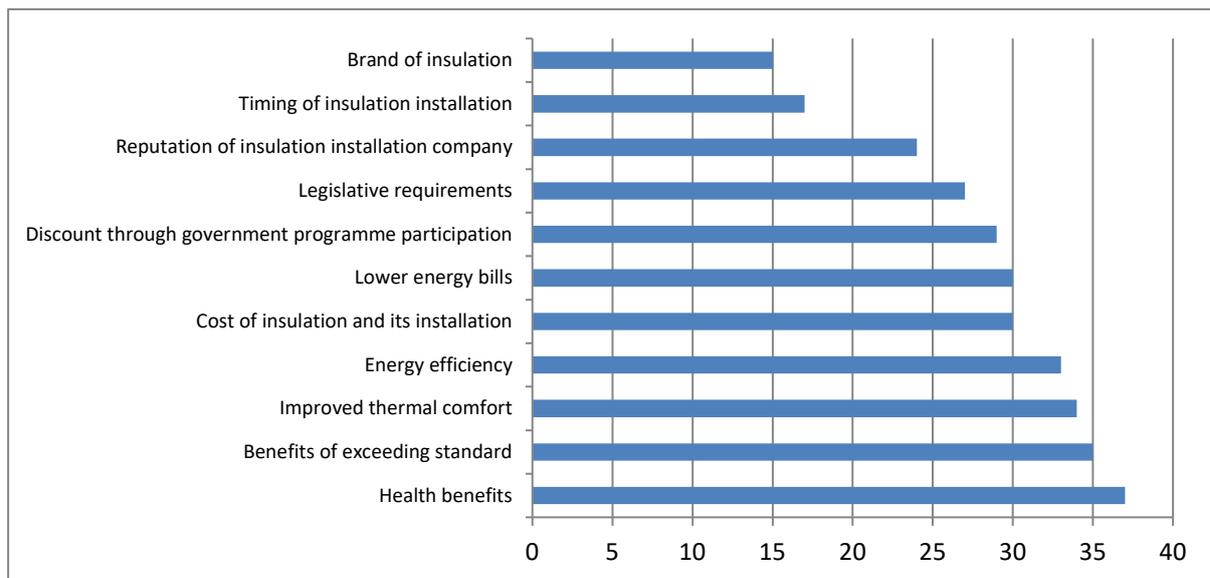
The majority of advisers who responded to the online survey (37) thought consumers did not know much about insulation standards. Six provided a reason for their views. Here, two thought that knowledge had improved over the years and the others that there is little knowledge about R-values, and general confusion and misunderstanding about what constitutes appropriate insulation, driven in part by different insulation standards.

However, this view is not entirely consistent with the consumers' views. Here, while the sample in this study is small, it shows that although consumers did not know much at the outset, the majority were prepared to find out what to do and what the most appropriate solutions were for their situation. This is likely similar for small scale (amateur) landlords, but the industry stakeholders thought larger investors are more likely to be aware of available information.

The survey respondents think there is a range of aspects consumers need to know about retrofitting insulation. Figure Three below shows the top three areas of information these advisers thought consumers need information on, from the list provided in the survey: the health benefits, the benefits of exceeding standards and improved thermal comfort.

¹² Given the small sample in the online survey, all graphs report in numbers rather than percentages.

Figure Three: The information advisers thought consumers needed (n=37)



Ten survey respondents made additional comments that, in general, related to understanding how all the warmth and dryness enhancing factors work together, with four of these talking about consumers needing to understand more about moisture, both in and outside of the houses.

You need to be careful around information that promises lower power bills or improved comfort. Insulation will only work if they still heat the house and ventilate to remove cold / damp air - this will add to the power bill. It (insulation) does not stop mould which is another misconception.

Home owners need to know how to operate their homes - not just insulate, and end up with higher condensation levels. (HPA)

Consumer decision-making

Before undertaking the insulation process the 14 consumers wanted to know a range of things. For the majority (10), price / cost was the key factor. For some this was the price on its own. For others, it was about the whole of life costs and benefits. These were referred to in terms of efficiency; in relation to retention of warmth and comfort levels, in terms of using environmentally-friendly products, what the return was for themselves (or for rental properties) if they were intending to move or stay in the house long term. Upfront costs were important because of tight budgets or budgets that had been allowed for renovations. Subsidies were also very important for some of these consumers. For a few, the actual price / cost out-weighed product choice where they would have preferred to use products that were more environmentally friendly. Only one consumer thought that products were “much of a muchness” and therefore was driven solely by the price to be paid.

These factors were also weighed up against convenience or ease of insulation, especially when the consumers were installing the products themselves.

L took a range of factors into consideration. Price was one of them as there was other work that needed to happen on the house. They were also concerned about the type of product as they were installing it themselves. They went for earth wool as it is, “not itchy, safe and quite well priced”.

D works in the architecture industry and said she knew a lot about insulation. However as first home owners it came down to cost. If they had intended to stay in the house D said they would have

installed a wool blend insulation product as they think its thermal properties are better than other products.

R has been living in their house for some time and intends to stay there. The family has had an ongoing insulation retrofitting process and wanted to know how cost effective the different products were in terms of reducing power usage and retaining warmth.

Convenience was important in the decisions of six of the consumers. For some this was wanting to know that installation would be completed in a timely and efficient manner by the installers whereas those installing the products themselves, wanted assurance about product features. For example this included whether the product was not irritating or hazardous if inhaled or when on the skin and that it was easy to handle and install.

As we were doing it ourselves we wanted a non-itchy product and wanted something easy to use. We were able to cut it and put it in. As it is in rolls it was easier for our old house which has imperial measurements rather than metric. Products that come in slabs such as pink bats would not have fitted the house.

While product type was important to consumers this related in turn to cost and ease of insulation. Only two consumers talked about considering R-values, with one of these also talking about the type of product and the reputation of the installer. Those who used installation firms also wanted to know about the quality and quality assurance of the work.

Overall, cost influences the decisions made by most of the consumers. Aside from price, cost-benefit related information and advice was less likely to be provided by advisers than compliance and product information and advice on benefits. Advisers say consumers need to know about the benefits of exceeding standards, but this is not a feature of the advice that is commonly given by advisers. What we are seeing here is that the supply side views of what is important, isn't matching what the demand side wants to know about in relation to cost. Further the supply side recognises the need to advise consumers about exceeding standards, but this is rarely provided.

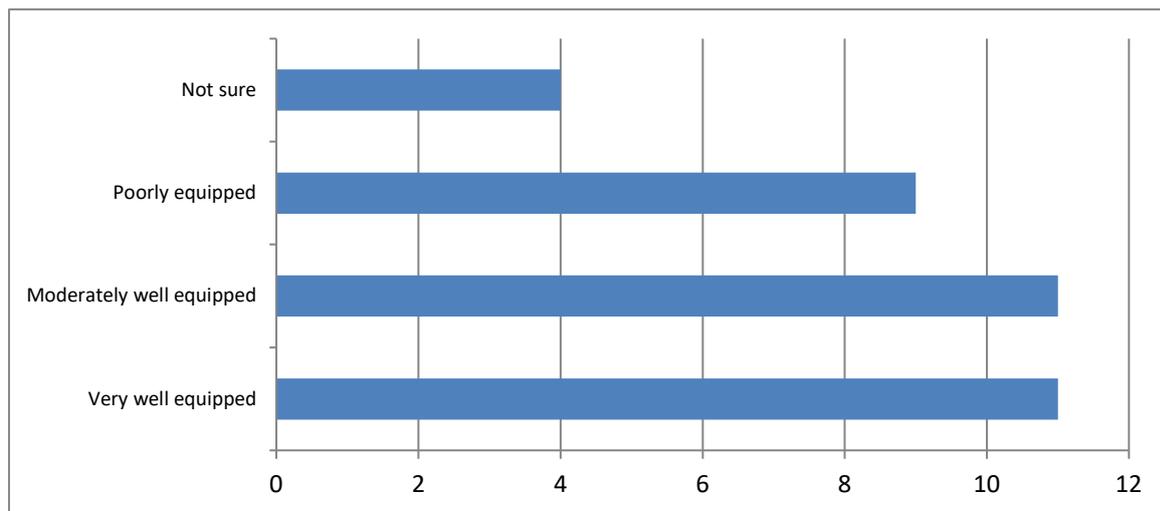
A point worth noting is that advice and information is coming from different sources who have different drivers that cover selling, installing, compliance or healthy homes perspectives. This appears to impact on the type of advice given. For example, large retail companies tend to stock a small range of products and these are typically derived through well-established manufacturer/supplier relationships. Product information contributes a significant amount to the information used by advisers in these companies.

Quality of advice

How well-equipped are those who provide advice to consumers? The advisers in the online survey held varied views on this as Figure Four shows.

Almost two-thirds (22) think the people who provide advice are 'very well equipped' or 'moderately well-equipped' to promote the benefits of insulation to consumers. A further quarter (9) of the respondents said people were 'poorly equipped'. Those who said their people were very well equipped came from a mix of installation (6); inspection (4); retail (2); and eco design (1). Five of those who said advisers were 'poorly equipped' did not work in companies that installed or sold products.

Figure Four: Capability of advisers (n=35)



Eighteen survey respondents made additional comments. Around a third of these were from those who thought advisers were 'poorly' equipped and said this was the case as it was 'about the sale' or that the consumer did not know enough about products or about the whole home approach.

Very much an open free market approach and consumer beware as purely around sales rather than information and upskilling. The process is very confusing for clients if you are explaining how insulation works, difference between types (fibre glass vs polyester), why ground moisture barriers are so important for suspended floors, why replacing existing down lights with IC rated LEDs is so important, difference between Manufacturers R Rating and Installed R rating..... etc. A proper house assessment and measure takes me 90 minutes including good discussion with clients. Industry standard is probably 30 minutes. (Poorly equipped: Installation)

Most only know their product and not the differences between the products available and how they work. (Moderately well equipped: Retail)

Our staff are well trained, however the cost implications and understanding of benefit/cost is not widespread in the industry or general public. (Very well equipped: Installation)

Depends on who you are talking about. Those selling products often know a lot, but provide only partial advice because they seek commercial advantage. Independent expert advisers are best at providing objective advice. (Not sure: Home Performance)

A few people commented that there was a need to get complex information across in a simple, non-technical way so that consumers could make well-informed decisions.

Overall the survey respondents don't think consumers are that well advised with only seven thinking they are 'quite' well advised and one that they are 'well' advised. The strongest theme in terms of what prevents consumers getting the right advice revolves around concerns that advice is commonly partial, and in particular that the advice is being given by those who were selling products (14). This was followed by the price of products (7); poor advice being given by those working in the field or associated fields (6); and a lack of information or conflicting information (6).

Usually it is the salespersons of insulation or ventilation. Sometimes it's just not understanding the difference between products and the ways that they can be installed. Not knowing where to get sound advice. Listening to poor advice and ignoring good advice. Good advertising and low prices can lead to poor products or services. (Independent Adviser)

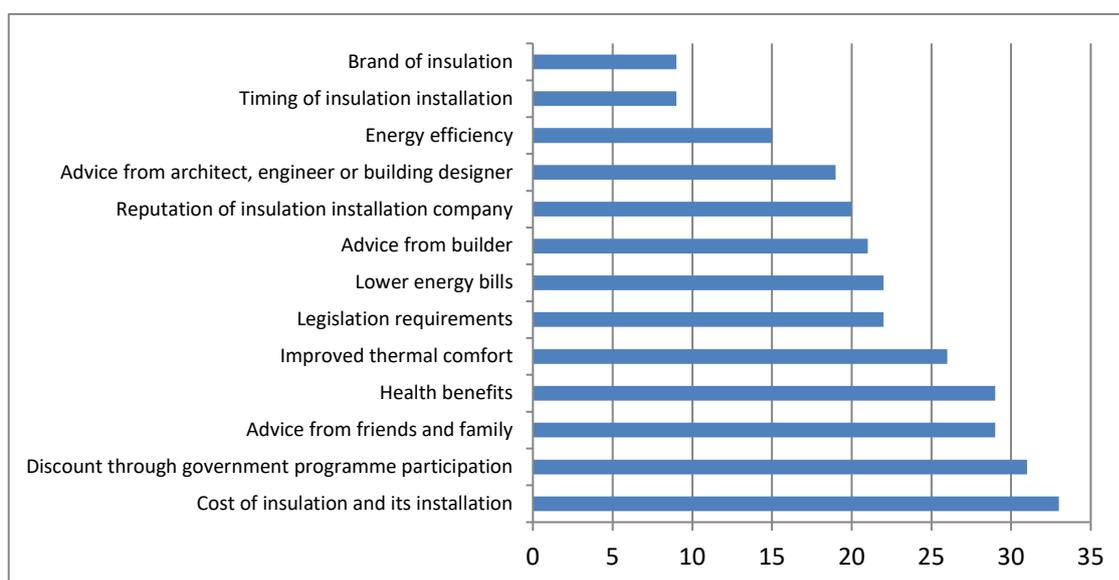
The correct information isn't always easy to find or sometimes understand. Companies that are just in the market for making money and not worried about the customer. (Installation)

A point made by two respondents was the lack of time and capacity in the sector to provide in-depth advice. Firstly, sales people are under pressure to make the sale and only have the time to promote their products. Secondly the low numbers of people with roles as independent advisers.

Those that are impartial are often in under-funded community organisations and have limited capacity to address all enquiries to a high standard. (Inspection)

However, a point to note made by survey respondents, is that in the end it is the consumers' choice about what to purchase and install, and that regardless of how well advised some consumers are they will always go with compliance and the minimum. Also, as Figure Five below shows there are a range of factors and influencers used by consumers to inform their decisions.

Figure Five: What influences consumers' decisions (n=37)



Survey respondents thought advice could be improved in the following ways:

- Through more information (education) provided in, for example, television campaigns, brochures, information provided by Councils (21). Such information could include the benefits (health, cost impact), whole of home, along with the benefits of going above standard. There is a need for both generic and specific information
- Through access to better, independent advice. This means either having more people who are able to provide independent advice or ensuring all advisers are trained/qualified to provide the advice. (14)

Other points made that would help to improve advice included, retaining subsidies (2); regulation as per the landlords (1); and raising the minimum standards (1).

Raising the minimum standard, establishing a NZ standard required for installers to install insulation, improving education of sales assessors. (Installation)

Best and honest advice. A change in thinking from minimum to best. Taking the whole of house efficiency into consideration rather than shiny flash bits of the house. (Retail, installation, inspection)

Consumers' views on advice

From the consumers' perspective, those who used a variety of sources, or didn't need to use them as they already had the information, said there were no gaps in their information. Only four talked about issues they had with the advice they received. The one person who based the decision solely on what the installer said did identify a problem with the advice they had received. In hindsight the consumer realised they should have been told to put polythene on the ground as damp was still seeping through the insulation product. Two consumers talked about wanting to have information on product comparisons in simple terms, e.g., type, cost of product and the insulation value of them. The fourth consumer talked about the difficulty of finding information on the BRANZ website. Although the consumer admitted this was a while ago they said it took several clicks to find the information as the site was not that searchable.

The 15 Industry Stakeholders interviewed for this research also identified the quality of advice being given and several pointed to the need for better advice to consumers in relation to interventions that can complement insulation such as ventilation. A number viewed current consumer knowledge as being higher than in the past. This was attributed to advertising campaigns, greater use of 'google' (which is confirmed by the consumers) and that industry itself has played a role in promoting standards. The Industry Stakeholders also thought Industry bodies have an ongoing role in promoting improved practices e.g., in home assessment, auditing and training and to support the industry to deliver more consistently.

Consumers' advice to others

While information and advice is given by professional and quasi-professionals in the market, family and friends are also considerable sources of information. As shown in Figure Five the survey respondents rate them as the third highest influencers of consumers. It is useful for advisers and those communicating to consumers to be aware of this informal advice in the market. This may contribute to the gaps in information and advice available to consumers as they grapple with making informed decisions.

Overall consumers thought holistically about their experiences with the process of finding out about, deciding, installing insulation and then the end result. Given most sourced their information from multiple sites, they advised others of the need to 'shop-around' and to get information from a variety of sources.

Probably what we did. Look at cost, how long you are going to stay in a place. Look at websites. If you knew nothing or didn't know where to look, Energy Wise have a website that has tips... You can also Google.

I found the Sustainability Trust really helpful. Do research on line. It's hard to know [what to do] until you know what the house can take. There are a multitude of options out there about what you should or shouldn't be doing. Get advice from a series of people. I'd also tell people that double glazing doesn't fix crying windows!

Not sure - but would say insulation makes a huge difference in heat retention, but I don't know if it is worth the cost. Find out more information. But what we have is good for us - we are happy with it. But then others are also happy with what they have.

Consumers were also eager to tell others how easy it was to install insulation, that you can do it yourself, and about the particular types of products that have suited them.

Don't pay someone else to do it - it is easy. I'd recommend glasswool – the brown stuff. It has different roll sizes and widths, a range of R-values. Bunnings has signs for this. Also recommend going to the BRANZ website about R-values. Get that confirmed and then 'you tube' how to install.

Insulate now, don't wait. Look at the Council website as you can get financial help (targeted rates). Look at the Council list of preferred suppliers. Install highest R-value you can afford (the code is the lowest level). Insulate internal as well as external walls if you're doing walls as the benefits are significant. For rental property owners I'd say do it now. There will be a big rush when rentals have to be done.

Consumers also advise others about their experience of gaining benefits, particularly in terms of warmth and improved health from installing insulation. This is not surprising given that increased warmth was the outcome of the insulation for all the consumers. However, around a third of them had also installed other thermal enhancing fixtures, e.g., heat pumps, double glazing, curtains. This demonstrates insulation is one of a number of features consumers are considering when improving the warmth of their homes. Along with the warmth went drier houses and healthier families for those who had said health was a driver for them to install insulation. Power saving was commented on by a few, because of having to leave heating systems on for less time or using less wood in log burners.

We have a warmer house - but also put in a heat pump, underfloor insulation, double glazing, curtains with pelmets. It's the cumulative impact. We got information for these things from the Sustainability Trust.

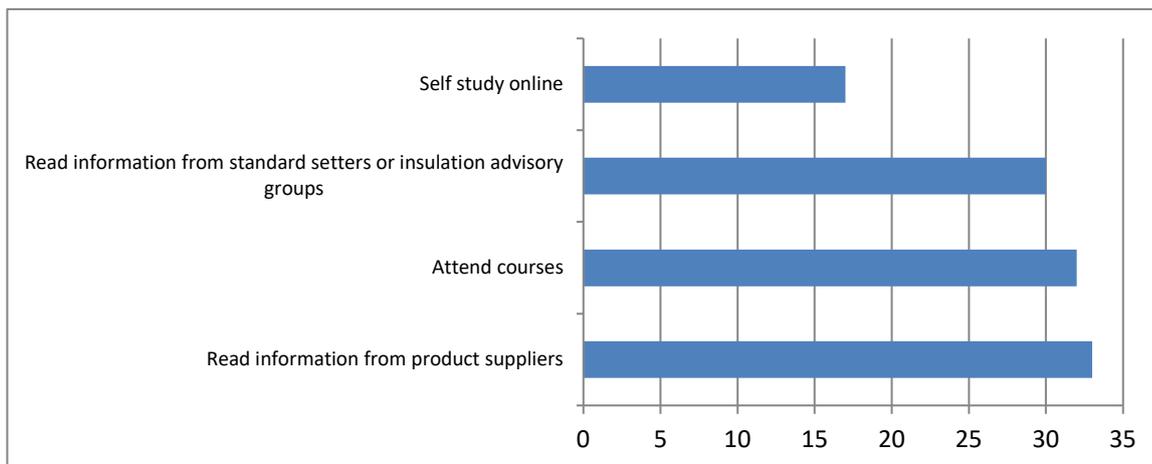
While many of the consumers had used the internet, felt comfortable doing their own research, that they had found the right information and where they had used advisers they were helpful, others thought there was more that could be done. Here the key suggestions were for:

- The need for “a one-stop shop” that has independent advice and all the information about the type of insulation, how to install it, and more generic information on how to keep homes dry, warm and energy efficient. This could include a tool that allows people to calculate the best type of insulation for the region and the house. “With insulation, it seems like one size fits all, but each house is unique.”
- Policies that ensure subsidies are more consistent and available over time to address cost barriers, especially in relation to preventative health strategies, and meeting chronic health requirements.
- More available information on whole of life costs and benefits of insulation alternatives more broadly.
- A variety of different communication approaches that take culture into account, for example thinking about how best to communicate with Māori and Pasifika home owners and tenants.

Training for advisers

To provide quality advice, advisers need to know and be able to talk about a wide range of factors associated with insulation and in some cases, installation. Training is therefore a key element for ensuring those who provide advice to consumers have knowledge about the range of factors associated with warm and dry homes. However, industry stakeholders suggested the level of training in the industry was hugely variable. A number considered there was a lack of advising skills, on-going development to understand new technologies, and that training tended to be product based.

Figure Six: Training Provision (n=38)



As Figure Six show, the three most common forms of training survey respondents noted were: to attend courses, read information from product suppliers, and read information from standard setters or insulation groups (e.g. IAONZ). As such the main way advisers are learning is through reading.

Other training referred to was the Home Performance Advice (HPA) programme (5), through Eco Design Advisors and IAONZ. A small number (3) talked about in-house training, training in relation to legislation (1), and learning through experience (1).

Advisers' knowledge needs

While certified HPAs require¹³ a Level 2 qualification¹⁴ no others who provide information or advice require a qualification (e.g. IAONZ training). Along with the differing roles advisers have in the market, this is a possible contributor to the less than optimal advice some consumers receive.

There are no approved standards [qualifications] for installers in New Zealand and nothing stopping DIY people or non-trained installers installing insulation in NZ. Means this stays a low margin and poorly paid and appreciated profession. (Installation)

Of interest is that apart from HPAs, the training provided to those in the insulation industry is seemingly minimal and reliant on individuals reading about products and standards, yet when the survey respondents talk about what knowledge is required, it is reasonably expansive and technical.

Survey respondents had a number of suggestions about what knowledge and skills advisers and/or installers should have and be part of a training programme, including:

- Product knowledge was necessary. This meant knowing about products, the types that best suit different houses and conditions and the cost and benefits of various products (16).
- The need to know about standards, codes, R-values, regulatory requirements(15).
- Holistic knowledge about how houses work, and the thermal envelope that allows them to stay warm, dry and healthy was needed (7).
- How to communicate with customers and to work from their needs (6).
- HPA training was needed (6).

¹³Further information can be found at http://beaconpathway.co.nz/further-research/article/home_performance_adviser_certification

¹⁴ The register of Home Performance Advisers shows there are 70 people certified across New Zealand. http://beaconpathway.co.nz/images/uploads/HPA_register_at_4_April18.pdf

The variation in what advisors saw as necessary knowledge can be seen here from three respondents:

1. NZS 4246:2016 2. Home Performance Adviser Level 2 3. Residential Tenancies Act 1986 with the 2016 amendment. 4. Insulation product knowledge. (Retail, inspection, installation)

They should understand what the thermal envelope is and how it works and have a good knowledge of standards and products, including installation requirements. And they should be aware of new developments. (Not for profit trust)

Start with what the client wants (and what they already have) and gauge whether this is possible in their house. Work within the Residential Tenancies Act, look at the minimum requirements and then provide information to the consumer on the benefits of going over this. Provide product information and why various products are the best choices for consumers. Work within the client's budget. Provide options for clients where there are inaccessible spaces, e.g., other options for keeping cooler in summer and warmer in winter. (Installation)

Exceeding standards

As described previously, the minimum standards relevant to the retrofitting of insulation are articulated in terms of minimum recommended R-values, and the NZ standard for the installation of insulation. The requirements of the Residential Tenancies (smoke alarms and insulation) Regulations 2016 sets a regulatory minimum for rental properties and the New Zealand Building Code must be applied in consented processes.

Exceeding standards is seen by advisers primarily as applying a higher R-value product than the minimum. The survey respondents provide a continuum of information around R-values to consumers. For 14 of them this concerned product types or explanations of R-values. Information about meeting minimum standards was also given by 14 respondents. Here the minimum standards covered the criteria for accessing funding subsidies and for meeting code. Nine said they provided advice on the benefits of going above the standard and using a higher R-value product. These nine came from across the industry.

The R-value to meet a legal or funding requirement. Also that higher R-values will yield better results in the long term. (Installer)

Higher R-values = less heat loss - they should choose products with higher R-value if they can afford it. (Installer)

The others talked about specific products or the importance of proper installation. The latter references the importance of ensuring installation meets the recommended standard.

Minimum insulation standards requirements brochure –MBIE. (Installer)

We explain what the minimum standard is, and that it is a minimum, not an optimum and much better results can be achieved with a marginal additional investment. (Not-for-profit HPA)

Explain that research shows that how insulation performs is approximately 50 percent on choice of product and 50 percent on how installed - so quality choice on both is critical. (Installer)

In spite of the nature of advice given, around half the advisers thought consumers go above the minimum standards 'quite often' (14) and 'very often' (4). However, this thinking is not borne out by the consumers who were, in the main, driven by the direct price / cost.

Around half of the survey respondents thought consumers were 'quite' interested in exceeding insulation standards with three thinking they were 'very' interested, and 15 that they were 'not'

interested. Thirteen provided a reason for their comment. The key point from those who said 'not interested' was that these consumers did not know enough about the benefits and see the standard as a goal that has to be met, rather than a minimum to be met.

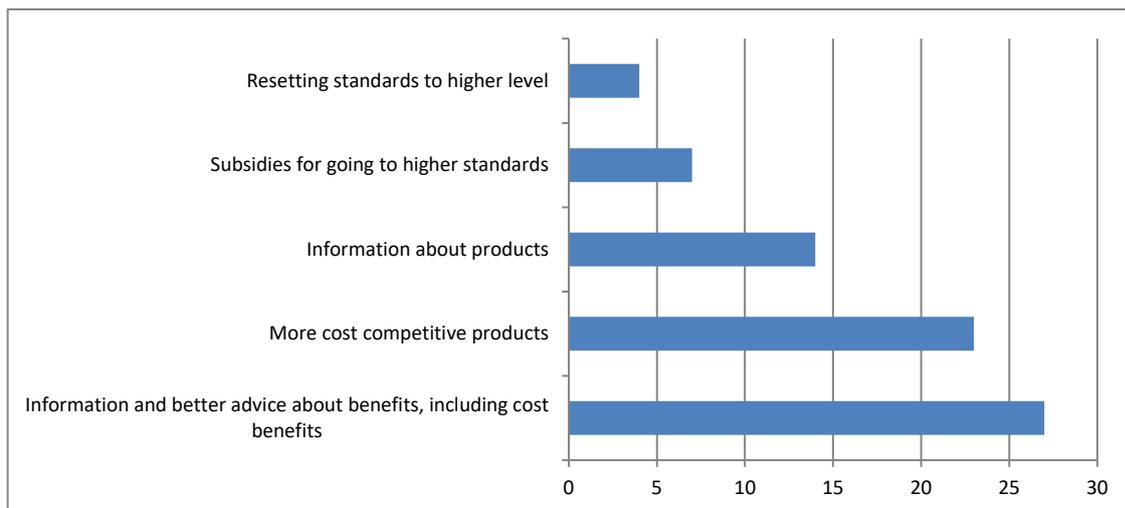
Most of NZ have the culture that meeting a standard is a great achievement in itself as it is set by an expert, so [there is] no need to exceed. (Retail)

This finding is in line with the majority of consumers' views. Here it can be extrapolated from their comments that their lack of action related to exceeding insulation standards comes back to cost, given that:

- they are primarily driven by price and do not know about cost-benefits (cost)
- they are not interested as they do not intend to remain in their homes (cost)
- they are landlords who want to comply with legislation (cost)
- they do not know about R-values or there is not enough information available about the benefits of exceeding the standards (information)

There are small indications from the consumers who were interviewed that homeowners are more likely to exceed the standards than landlords with cost being the driving factor in terms of the return on investment from their rental properties. The survey respondents think there is a range of factors that could be considered to encourage consumers to exceed standards.

Figure Seven: What would help consumers to exceed standards (n=37)



As the Figure Seven shows, these include information about products, and more cost competitive products. The most frequently cited factor however is related to information and advice about benefits including cost benefit information. As already noted above, cost is the key driver in the decision-making for consumers. Subsidies and standards were also commented on by respondents, which also relates to cost.

Increase the standard. Enforce RTA. Increased funding. Sales person educating customer on benefits and supporting them to choose better product, instead of cheapest quote. Public education "Beyond the code". (Eco designer)

We need to increase the minimum standards and how insulation is installed rather than get them to exceed the standards. Also talk more about in situ R ratings rather than manufactured ratings. (Installer)

Advice from a trusted independent person presented in an effective way that speaks to their specific situation. (Builder)

Discussion

So what does all this mean when we look at the two sides of the insulation market? Firstly, there is a considerable demand side given there are around 830,000 houses that fall below insulation standards and the changes to the Residential Tenancy Regulations in 2016 that sees landlords having to insulate ceilings and underfloor, where practicable, by July 2019. Combined, these indicate considerable short- and longer-term demand for insulation. Awareness raising campaigns, subsidies and regulatory changes are of course contributing to creating actual demand from motivated consumers.

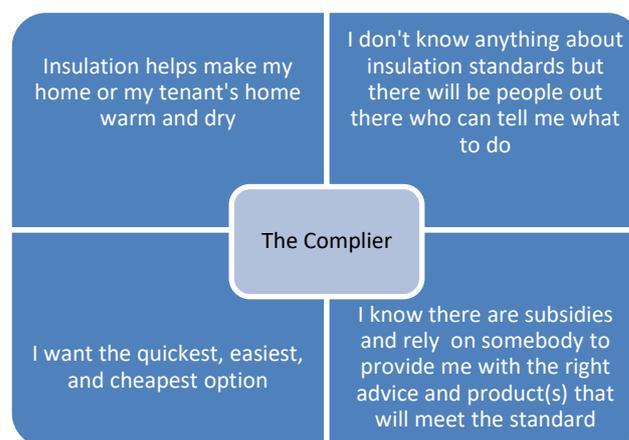
The supply side of the market seems to be well-placed with products that meet and exceed standards. Further, it is staffed with a range of people who provide information and advice to consumers on a range of factors associated with what it takes to get a warm, dry home. Much of this advice relates to what it takes to comply with standards.

However, as with any market it is consumers who make the choices and their needs should be at the centre of the advice that is provided. Consumers interested in retro-fitting their homes or rental properties have a range of motivations that need to be understood to better meet their information and advice needs. These consumers have differing needs and differing drivers for installing insulation. They also enter the market with differing levels of knowledge about products and what the best solution is for their situation.

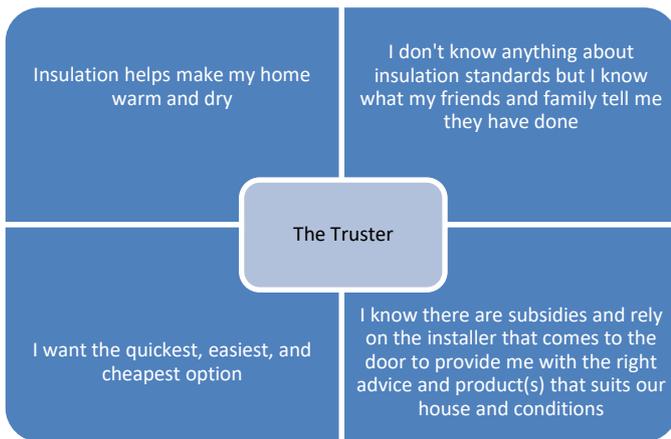
With this in mind and drawing on the findings from all sources in this research, there are four consumer types, or personas that need to be considered so that information and advice can be tailored to meet their needs. Each of these will view their information/advice needs in a different way.

Persona One: The Complier

The Complier is motivated to get the job done because they have to. They want to do this as cheaply and easily as possible. They will trust the source of the advice/information they receive. This likely reflects many landlords who are being required to install insulation who might have little interest in finding out about or doing more than the minimum. They tend to be guided by the advice accessed through a 'trusted source' e.g., from property management or retail identified installation companies.



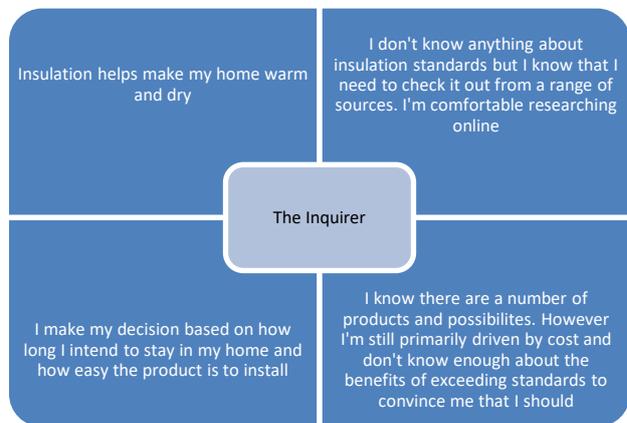
Persona Two: The Truster



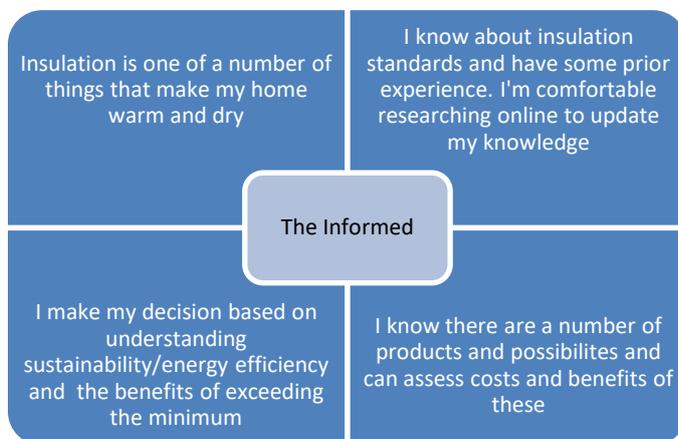
The Truster is aware that having a warm home is about more than just insulation and the need to do a number of things to achieve this. This person does not know very much about insulation, except that it contributes to making their home warmer and healthier. They are not questioning, rely on single sources of information, e.g., family and friends, installers for information, are driven by cost and are not aware of R-values or the benefits of exceeding the standard. They also want a 'quick' fix so will take the easiest option that is presented to them, regardless of whether it is the best one.

Persona Three: The Inquirer

The Inquirer is aware that having a warm, dry home is about more than just insulation and they need to do a number of things to achieve this. This person does not know much about the types of insulation available or the best products to use and will seek information from a variety of sources including, installers, independent advisers and websites. They are aware of R-values, but in the main opt for the standard as they are driven by cost and do not know enough about the cost-benefit of exceeding the standard. They also make decisions based on how long they intend to stay in their homes and the ease with which products can be installed. The majority of consumers in this research fell into this category.



Persona Four: The informed



The informed consumer is aware that having a warm, dry home is about more than just insulation and that they need to do a number of things to achieve this. This person has experience from previous insulation projects or from working in associated professions. They know where to seek additional independent advice, usually through websites, and are able to weigh up the cost benefit of exceeding the standard and are prepared to do this. They also understand what different products are available, and what is the

most suitable product to use in their situation.

Overall, the consumers are not a homogeneous group. While they want the same outcomes from insulating their homes, they come at this from different knowledge bases and with different drivers for the decisions they make.

Information and advice for these consumers

This project sought to understand the extent to which consumers might be advised about options for them to exceed minimum standards for insulation. Advisers in some parts of the industry are focused on informing consumers about the range of options to improve the performance of their homes in relation to thermal comfort. For many others however, the focus is primarily on making the sale and quoting for minimum standard installations using primarily manufacturers product information. This is particularly so for those accessing subsidies where they have little choice to exceed standards, and for landlords who are primarily motivated to comply with regulation.

To this extent, it could be argued that the information accessed by consumers, particularly through trade and insulation industry sources may not be as independent as consumers may expect. Subsidised consumers may be better protected in terms of independence, given the use of EECA registered installers and products, and post-installation audits. Yet here, there is little ability for consumers to be enabled to exceed insulation standards.¹⁵

For many, namely those in the Complier and Truster category, the decision to proceed with a retrofit will be purely based on the cost of the product and the installation and whether this can easily be completed. These consumers are looking for minimal information and want to trust the retail/installation company. They may depend on third-party recommendations (be they from friends, or industry players), but they have little desire to examine options, or consider doing more than meeting requirements.

These consumers could be better serviced. There are a range of ways this could occur: some common information products could be developed across the industry to advise consumers of standards, the benefits of exceeding them, and questions for your retailer/installer. A calculation tool that enables consumers to assess their needs and weigh up options would also be useful. A key aspect of this advice and information is to ensure complex and technical information is presented in simple and non-technical ways.

The Inquirer and the Informed will typically search for and identify a wider range of information on standards, performance ratings of products, quality assurance and audit of installers. The information available on the EECA Energywise, BRANZ and MBIE sites is relatively consistent, but again the benefits of exceeding minimum standards or what exceeding means practically beyond use of a higher R-value product is not easily identified. There are benefits from advisers taking a whole of house focus in the provision of advice, yet the availability of advice from advisers is inconsistent on this, and generally available only to consumers who actively pursue multiple sources of information¹⁶.

There was a consistent third of industry advisers who suggest that understanding the range of benefits from exceeding minimum standards is important information for consumers. The Informed consumers tended to know something of these benefits, but not consistently, and were quick to suggest multiple sources of information were necessary to be properly informed. Is this however a reasonable expectation given information on exceeding standards is not easily available?

¹⁵ It should be noted however that research has demonstrated substantial benefits from correct installation of insulation at minimum standards (see for e.g. Grimes et al (2012)).

¹⁶ Of note here is the EECA campaigns (Energyspot and 3 Essentials) which have publicly promoted the concept and actions that take a whole of house approach to home warmth, dyness and energy efficiency. This helps build consumer awareness that advisers can utilise to provide improved advice.

A final theme here concerns the extent to which available information is impartial or independent. Survey respondents thought a sales focus posed a barrier to ensuring good advice to consumers, and that the advice given can be poor or inconsistent.

There are therefore several things that get in the way of consumers being informed. These include:

- having multiple standards and minimum requirements makes it a complicated information landscape
- consumers' motivation varies significantly
- consumers would usually only look to retro-fit insulation once, so don't build knowledge over time
- friends, family and sales people are key informants and are likely to have limited information
- consumer experience with government websites that are informative but complicated and require persistent searching
- the costs and benefits to consumers of insulation specifically, and a holistic home solution in general is not well articulated or understood, and for many may only be accessed through experience.

Meeting and improving on minimum standards

There are limited standards applying to parts of the retrofit market. The standards that are present seek to ensure that an expected level of performance is attained from products and their installation. The degree to which minimum standards are complied with is difficult to assess and so the market, and hence the consumer, relies to a significant extent on the competence of the adviser and installer and the use of products that meet standard requirements.

There are also other factors that contribute to an infrastructure to support compliance with standards. These include qualification development and monitoring, and the listing of insulation products accepted by the WUNZ programme. Quality manuals and guidelines, quality checks by trained installers, and a limited number of independent audits of work done by all service providers have also been undertaken by EECA as part of quality assessment within the WUNZ programme.

The issue here is that standards are important in this market where consumers have limited ability to be assessing whether advisers and installers are competent, or that the products they install are performing to the expected level. The fact that different R-value requirements exist in different geographical locations is likely to increase the cost of insulation (given the range of products that need to be manufactured) and makes it confusing for consumers. Advisers also comment that the standards are low, and some questioned whether they were sufficient to achieve desired health benefits¹⁷.

Measurement of costs and energy savings completed for Up-Spec on the BRANZ website suggest higher R-value standards can be at least cost effective.¹⁸ Here, Up-Spec identifies the marginal additional cost for consumers of installing R4.0 bulk ceiling insulation (upgraded from the minimum requirements for R2.9 or R3.3). This suggests that the marginal extra cost for those building a new residence is \$200-\$480 per home of 160 m², with resulting energy savings of between \$30-\$160 per year depending on the house location.

This information suggests that exceeding the standard includes the use of above minimum R-value products, the application of the NZ standard (NZS4246) for insulation installation, combined with a

¹⁷ The evaluation of the Warm Up New Zealand: Heat Smart programme in 2011 however found retrofitted insulation had a significant impact on reducing hospitalization and pharmaceutical costs for occupants. The findings of previous research on health benefits may not be well known or understood by advisers. http://www.healthyhousing.org.nz/wp-content/uploads/2012/03/NZIF_Health_report-Final.pdf

¹⁸ Accessed at https://www.branz.co.nz/cms_display.php?st=1&sn=257

whole-of-home approach to assessing and achieving a warm and dry home. These factors work in a complementary way to enhance performance.

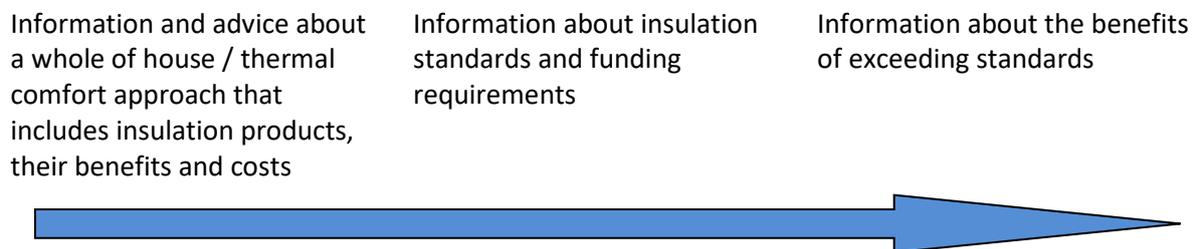
Regardless, most consumers tended to be uninterested in exceeding minimum standards, and this decision was largely cost driven. Improving the cost competitive nature of products would assist a portion of the market, although not all (e.g., landlords, those anticipating leaving their current home). And why would they be? This study shows that most consumers start from a point of not knowing much about insulation. While some will go on to find out about it, the Complier and the Trustee will accept the advice provided (whether it is good or not) and at best aim for the minimum standard. There is little incentive for them to exceed this and it could be argued this is sufficient. Where the consumer is a subsidy recipient there is also a disincentive to exceeding the standard, as the subsidy is likely to only allow them to meet the minimum standard. This however is to some degree mitigated for subsidy users given the quality auditing regime applied by EECA. Lifting the minimum R-values and simplifying them may contribute to a higher level of insulation being fitted into New Zealand homes, potentially at a very marginal cost.

Articulating the benefits

There are incentives for consumers to identify improved thermal comfort from their insulation installation having gone to the bother of having it installed. It is likely that Informed consumers would know about this benefit, Inquirers would find this out, should they get to this level of information through talking with others, reading information, and searching websites. The Compliers and Trustees will not get to this unless they are specifically provided with this advice.

However, consumers should be given the same impartial information and advice across the market. As such it is worth considering a continuum of information that could be provided by all sources.

Figure Eight: Continuum of information



Few of the consumers spoken to had considered exceeding insulation standards or had more than a minimal understanding of the types of benefits beyond meeting their own needs for warmth. This isn't surprising given information is not easily transferable to their own property requirements. Installers note that tailored and specific advice is required to ensure individual property limits and opportunities are fully understood alongside information needed to ensure the right product is installed and to manage installation requirements.

Cost benefit analysis work has considered a range of specific elements such as electricity costs/savings, the direct benefits of an increase in productivity, decrease in sickness and longer term health outcomes and the ability to work more, and do other activities.¹⁹ The broader benefits of thermal comfort and whether insulation adds other benefits to homes/houses is worth further exploration as consumers note a clear shortfall in their understanding of the ratio between the

¹⁹ A. Grimes, T. Denne, P Howden-Chapman, R. Arnold, L. Telfar-Barnard, N. Preval, & C. Young. (2012) *Cost benefit analysis of the Warm Up New Zealand: Heat Smart Programme*. Prepared for the Ministry of Economic Development. <http://www.healthyhousing.org.nz/research/past-research/evaluation-of-warm-up-new-zealand-heat-smart/>; Dr R. Chapman et al (2004); M. White (2012); Bob Lloyd (2006). *Fuel Poverty*. Social Policy Journal of New Zealand. Issue 27. March 2006

direct and indirect costs and benefits, including the different options for insulating their properties. The impact beyond the individual on our communities, and to the economy, is also relevant here.²⁰

Alongside general knowledge about costs and benefits, the costs/benefits of the options to meet the individual circumstances of the property suggest a second, or add on tool to assess property requirements and options.

Workforce knowledge and skills

As noted earlier, there is apparently a low take up of qualifications.²¹ Industry generally thinks the levels of training are 'ok' but note gaps in knowledge about insulation and its benefits, sales skills and how to communicate benefits simply with customers. This is a significant issue given the poor state of New Zealand houses. And combined with less than optimal adviser knowledge and skills may be resulting in substandard improvements in the performance of retrofitted houses.

Training needs to be considered alongside the difficulty noted in the industry to attract and retain staff. That said, training, development and a career structure can also assist in improving industry attractiveness and staff retention. An example exists in the aged-care sector where a Level 2 qualification is now a requirement with career development opportunities in place through a qualifications approach. Critical to this will be pitching workforce development at a suitable level to enhance quality and potential return on training investment, and linking this with a recognised and independent training authority.

From a credentialing perspective knowledge about insulation and insulation installation can be gained through Unit Standards that may be included within broader qualifications in the building and construction sector.²² These qualifications sit on the New Zealand Qualifications Framework. However qualifications for those working specifically in the field such as installers, auditors and assessors sits outside this formal framework, with those who pass the IAONZ installation training being deemed IAONZ certified. IAONZ stakeholders talked about the high turnover of staff in the insulation industry yet training, career pathways and career development through training and formal, nationally-recognised qualifications could provide an opportunity to professionalise the workforce and improve service, information and advice to customers. However, in the absence of industry or regulatory requirements the onus will fall on employers and individual staff, so the value proposition of career pathways and formal qualifications will need to be made.

Qualifications or some independent recognition of learning could also improve the extent to which advice has a greater independence. This could be achieved in conjunction with manufacturers, but needs some independent verification. The knowledge and skills identified by advisers as important for delivering effective advice is extensive. These comments are made on the basis that nationally the insulation workforce currently has little opportunity or incentive to upskill.

The recent introduction of micro credentials provides the opportunity for the sector to consider how it might go about credentialising more of its workforce.

²⁰ BRANZ. *Cost benefits of sustainable retrofits*. A report prepared for Beacon Pathway Limited, funded by FORST. April 2009.

²¹ HPA L2 qualification and IAONZ training for applying NZS4246 are the only identified specialist insulation offerings in the market.

²² For example, US 24386, Demonstrate knowledge of thermal insulation and sound control for buildings; and US 24401, Install thermal insulation materials in buildings on site.

Micro-credentials are a coherent package of learning and assessment, typically smaller than a qualification, that certifies achievement of a specific set of skills and knowledge needed by industry and or community. (New Zealand Qualifications Authority, 2018, p.1).²³

The thinking behind this is that it is a timely and useful way to upskill and acknowledge existing skills, and, “to maintain people’s currency in occupations, providing a mechanism for people with no qualifications to have their existing learning credentialed, and hence provide a pathway to new roles and jobs.” (ibid, p. 4).

The Building and Construction Industry Training Organisation (BCITO) has acknowledged the importance of taking such an approach, especially in a sector that is experiencing rapid and ongoing growth. Here they promote the value of qualifications /qualified staff for customers and that suppliers also value qualified staff. Further, it sets standards for the business.

But as with all industry training, employers and individuals need to take responsibility. The BCITO suggests some ways to improve the uptake of training is to:

- link training to pay, incentives, and responsibility
- offer seminars and workshops
- offer ongoing upskilling and internal training
- offer bite size things that lead staff into training
- have employers pay fees for all or part of the training.²⁴

Conclusions

Finally, we come back to the original research questions and suggest some general conclusions.

- What is the credibility and the skills base of those who advise consumers about insulation installation and minimum standards?

While around half (22) of the advisers surveyed say the advisory workforce is ‘well’ or ‘moderately well’ equipped to advise consumers, most don’t think consumers are well advised. The consumers who inquire and actively seek information themselves can most commonly find the information and advice they need. For those consumers however who primarily trust the advice they receive, and focus on getting the job done with the minimum of effort and cost, improved credibility and skills could enhance the insulation outcomes achieved. Industry Stakeholders say about half the workforce may be adequate at advisory functions. This suggests there is significant room for enhancing knowledge and skills.

Improving the levels of skill and knowledge in the industry would enhance the extent to which advice and information may be geared to what consumers want, be more impartial, and be communicated more simply and consistently. However the issue remains that those who provide the information and advice have differing drivers and incentives for this.

What this research shows is that the training provided to those in the insulation industry is seemingly minimal and reliant on individuals reading about products and standards, yet when the survey respondents talk about what knowledge is required, it is reasonably expansive and technical. The areas of knowledge recommended as being required by those giving advice include;

²³ New Zealand Qualifications Authority. (2018). *Micro-credentials in New Zealand’s education and training system: a consultation paper*. Wellington: Author. Accessed at <http://www.nzqa.govt.nz/assets/About-us/Consultations-and-reviews/Micro-credentials/Micro-credentials-consultation-paper-March-2018.pdf>

²⁴ BCITO. (2017). *Workforce development update 2017: Interior systems*. Wellington: Author. Accessed at file:///C:/Users/Alkema/Downloads/BCI.00977_WDP_2017_Brochure_Update_Interior_Systems_3.0_online.pdf

understanding and communicating the costs and benefits of various options, including above minimum standards, and taking a whole of house approach to assessment and advice.

Responses by the small number of consumers in this study indicate few are advised about the costs and benefits of each of the options available to them. Cost is a determining factor in the decision to retro-fit insulation and few will have the information or the advice that meets this requirement or ensures they understand what trade-offs or performance they can expect from their purchase. To this extent advice received by many consumers is not as substantive as it needs to be.

- What are the opportunities for enhancing the education and skill base of consumer advisers to improve the warmth and dryness of New Zealand homes?

There are substantial opportunities to enhance the education and skill base of consumer advisers. There are educational offerings in the market (e.g. HPA training and IAONZ training), yet these are not achieving sufficient penetration across the retail, installation, inspection and trades components of the market or enabling consumers to get consistent advice on the matters they care about. There is substantial opportunity for micro-credentialing and enhancing the certification of advisers –and building brand recognition of the certification to consumers.

Further, there is opportunity to improve the consistency of approaches to assessing properties and advising consumers about their options. This could involve the development of an assessment and advisory standard. However, in order to encourage upskilling through a training and career pathway, incentives may need to be provided either through subsidised training for individuals or having some sort of accreditation for having qualified staff.

Overall, there is a market with high demand that is not likely to go away in the short-term given the standard of New Zealand’s housing stock. If this demand is to be met in a manner that means the best possible outcomes for houses and their owners or tenants then the information and advice on the supply side and its attendant policies need to be improved. The ways to do this are given below.

Recommendations

The aim of this research was to consider how the advice to landlords and homeowners about insulation and minimum standards might be improved so that more New Zealand homes might be made warmer and dryer. Based on the findings of this research recommendations fall into four broad areas.

Standards and policy

1. Investigate the economic case for lifting and standardizing recommended R-values for insulation to enable a single R-value standard requirement throughout New Zealand to improve home performance and potentially lower the cost of products.
2. Consider establishing a standard for assessment for home retrofitted insulation and incentivising of audit functions or other mechanism that enables good practices to be consistently applied across the industry.
3. Consider the conditions under which incentives and subsidies might be applied to achieve above minimum standard, to promote training and extend holistic house performance assessments.

Advice & Information

4. Enhance the opportunities provided for access to independent information and advice, including:
 - a. being tailored to specific consumer types, particularly the more vulnerable “Truster”

- b. calculation tools that compare products/standards, benefits
 - c. non-technical and simple products that outline what minimum, better and best standards are, and why consumers might consider this
 - d. information or tools that enable consumers to compare costs and benefits and on taking a whole of house approach to improving warmth and dryness.
5. Create a one stop shop for impartial information and advice. This could include a review of key information websites, and an agreed way forward to minimize the search required to multiple sites for consumers.
 6. Focus marketing campaigns and promotions on particular consumers and groups, and on costs and savings associated with insulation.

Training

7. Explore current training and the potential for the development of micro-credentials and certification to improve the skill base and career pathways for advisers.
8. Recognise the need to develop training that can enhance consistency of practice across the range of locations in industry where advisers are found (e.g. assessing, installing, retailing, inspection).
9. Consider approaches to training that are less focused on reading, and more focused on improving consumer advisory practices.

Further research/analysis

10. Consideration of whole of house assessment and improvement options and whole of life cost-benefit analysis.

The basis of a sound working market that can lead to the best possible outcomes for New Zealand home owners and tenants already exists. It is a matter of adding to what is there to ensure consistent, simple, standardised and professional approaches to the provision of information and advice on retrofitting insulation.

Appendix One: Methodology

This multi-method, qualitative research study used a rapid literature review, stakeholder interviews, consumer interviews, and an online survey with those who are involved with providing information and advice to consumers about insulation and/or installation of it.

The research set out to answer two key research questions.

- What is the credibility and the skills base of those who advise consumers about insulation installation and minimum standards?
- What are the opportunities for enhancing the education and skill base of consumer advisers to improve the warmth and dryness of New Zealand homes?

The sub questions are:

1. What do organisations and advisers currently do/use to promote insulation standards?
2. What impacts on the advice that building/insulation professionals provide their customers? How effective do they think they are being?
3. Where do consumers source their information before having insulation installed?
4. Are consumer information and advice needs being met? What influences their decision making?
5. What is 'exceeding the minimum' for insulation retrofits? What are the benefits/motivators to going above standard for advisers / for consumers?
6. What would help consumers to be better informed and to exceed minimum insulation to ensure their residences perform well?
7. What gets in the way of consumers exceeding the minimum insulation standards and improving the performance of their residences?
8. What is needed to help advisers promote better insulation standards?
9. These were answered through three sources: online survey with 39 people who are involved in some part of the industry and provide information and advice to consumers about insulation; phone or face-to-face interviews with 15 industry stakeholders; phone interviews with 14 consumers who have retrofitted insulation.

Data Collection

As noted above, data were collected from three sources. The rapid literature review was used to inform the interview schedules and survey

Stakeholders: in-depth and tailored face-to-face or phone interviews were conducted with the following 15 industry players during 27 July -1 April 2018:

- EECA advisers (marketing & relationship manager) (2)
- MBIE Advisers (building code, residential tenancy information campaign, Smarter homes programme) (3)
- Large national retailers (3)
- IAONZ executive (3 – two for-profit businesses, one Trust)

- Property management companies (2)
- Property Investors Federation (1)
- Building inspector (1).

These interviews asked about their organisation's role in promoting and advising on insulation standards, how staff are informed/trained, the adequacy of this, and the barriers and enablers to consumers accessing and using advice.

Consumer: between November 2017 and March 2018 in-depth phone or face-to-face interviews were conducted with 14 consumers. A snow-ball approach was used with contacts identified through industry and personal networks. These were drawn from home owner-occupiers and landlords who have recently retrofitted insulation.

They came from Wellington (5), the Hutt Valley (3), Whanganui (2), Christchurch (1), Whangarei (1), Auckland (1) the Kapiti Coast (1). Around half of them lived in houses they described as old, as in around and just over 100 years old. Others lived in a range of houses that dated from the 1930s through to the 1990s. Those living in the houses were either couples or families with one-two children.

These interviews sought to understand the consumers' rationale for retrofitting insulation, what they knew about it when they started out, where they sought their information and advice, how they perceived this advice and what their experience was in relation to installing insulation. The interviews took around 20-30 minutes.

Advisers: An online survey was conducted with industry advisers. The survey was sent to the following:

- IAONZ members
- WUNZ providers (who were not also IAONZ members)
- Six insulation installation companies who were not members of any identified network
- Home Performance Advisers network members
- Mitre 10 and mega stores nationwide
- Bunnings headoffice.

In total 128 surveys were sent to potential respondents on 7 March 2018, with the invitation for these recipients to forward the survey link to others they knew of in the industry. Two reminders were sent one and two weeks after the survey opened. Five emails were undeliverable, four people responded that they were not the right people to complete the survey. These left 119 available as the survey sample. Forty-three started the survey, with 39 completing it, giving a response rate of 32 percent. As six respondents worked in multiple roles in the industry the total representation across the industry is: installation (19), retail (11), inspection (14), building (7), home performance (5) and eco design (4).

This provides responses from a cross-section of the industry, but it is impossible to know how representative the sample is. Those answering surveys may be expected to have a stronger connection to and interest in the industry than non-respondents. All but two of the respondents said

they provided advice to consumers about retrofitting insulation or assessments of retrofitted insulation. On average respondents spent 14 minutes completing the survey.

The survey contained both qualitative and quantitative questions. It was piloted with a small sample of respondents. It asked about the content of information and advice provided, including on standards, how often and what it may take for consumers to exceed standards, how well equipped advisers are, what training they receive, what knowledge and skills are required and questions about what they think consumers need to support their decision making.

Data analysis

The qualitative data were analysed using an inductive approach that allows the findings to emerge from the dominant or significant themes (manifest and latent) in the raw data. This approach ensured that evidential patterns are based on the experiences of the individuals. We started with the three individual groups (stakeholders, consumers and advisers) and looked across the groups to look for the similarities and differences in their views and the extent to which there were any particular issues and themes, (Glaser, cited in Cohen, Manion and Morrison, 2000).²⁵

It was intended to analyse the quantitative survey responses for patterns and trends in relation to the roles the respondents had in the market. However, it was not possible to do this given that some of those who responded held more than one role and we could not then attach a response to a role.

Strengths and limitations of the approach

A key strength of the approach was using three data sources. This allowed for data triangulation which increases the reliability of the findings. It is worth noting that there are similarities in the views of each of the groups.

The use of the rapid literature review to inform the interview schedules and survey meant these were then targeted and used the language of the industry. The stakeholder interviews also helped inform the survey and provided a macro level overview of the issues in the market.

The strength of the online survey is that it was easily administered to a wide group of people who held various roles in the market. Closed questions had the advantage of uniformity and easy translation for analyses. However, closed questionnaires did impose a set of fixed ideas on the respondents by forcing choices from a limited array of options. However, this was mitigated by an 'other' option in the question choices. Also the inclusion of open questions meant many respondents took the time to write their experiences in any detail.

The phone and face-to-face interviews with consumers had the advantage of enabling some flexibility to respond to their individual situations. The snow-ball technique worked to a more limited degree than anticipated as fewer interviews located in a more concentrated number of locations

²⁵ Cohen, L., Manion, L. & Morrison, K. (2000). *Research methods in education: Fifth edition*. London and New York: Routledge Farmer.

were completed than desired. Combined, the use of online survey and the consumer interviews offset the weaknesses inherent in use of only one method with the strengths of the other.

