

Written comments, classed by the level of engagement with the NSC process (answer to Q. 1).

This document contains all text responses, with editing only to anonymise respondents, and no omissions. The only processing has been to collect them according to their level of involvement with the proposal process.

Over 100 hours involvement in preparing proposals

I would have many comments, but I will stick to the most relevant aspect (in my opinion). The process by which the NSCs have been managed has been appalling. This refers in particular to very high uncertainties in the process itself (at some point one even casual observer would get the definite feeling that MBIE was not sure itself on what the next steps would be, and/or how to run an appropriate process for the following steps to go in the right direction). Examples include (but are not limited to): a) Let's run a series of consultive/brainstorming workshops involving a lot of the stakeholders/scientists.... and then while the workshops were run (or immediately thereafter) nobody knew yet what would happen to the feedback/main findings of the workshops b) Let's ask CRIs to commit a lot of their core-funding and explore co-funding opportunities, but without an existing proposal/milestone/draft (of any sort) on the type of science/projects/programs that would fall within (or outside) any of the Challenges... Interestingly, even if the Deep South NSC will be launched tomorrow by the Minister, we STILL do not have a clear proposal identifying EXACTLY what science/projects will be carried out for that Challenge... Sure, there is a version that has been circulated by NIWA, but it does not even go in that detail.



The Minister needs to know the truth not the MBIE spin. A disempowering process !



This has been a stitch up job from start to end, so that last century's scientists can continue doing last century's science. Stakeholder and scientist priorities have only been given lip-service; the challenges represent management and institution priorities. To actually get stakeholder priorities represented has been a huge fight, and only met with limited success. As a result, I can see no real marked benefit coming to New Zealand out of the proposed frameworks - definitely a complete waste of public monies as has been stated. The role that the CRIs have played in twisting the challenges away from their initial vision, with the primary aim of monopolizing as much resource as possible rather than working for the good of the country, demonstrates that they have become deleterious to New Zealand and need replacing.



Independent governance should have been established for each challenge at the outset rather than leaving the sector to stumble along in the dark. Good national collaboration requires good governance the trouble was MBIE did not know what the Minister wanted and did not have the resources to manage it properly. A contestable process was also not the right approach when the expectation was for a single proposal.



My major frustration stems from the fact that the focus of the Challenge in which I have been involved appeared to change sometime during the review process. A lot of time and energy has been wasted as the result of a process that was somewhat opaque.



I think there are pros and cons to the NSCs. They are mission-led so not appropriate for Marsden. They probably will create more national collaboration around some significant challenges for NZ and that will be a good thing for a small country where it is difficult to achieve critical mass on the world stage. I think it would have been better to have followed a CoRE-like model but they may yet end up that way. The biggest concern is capture by few influential groups but I think the Science Board is watching that carefully and sending proposals back to the drawing board if they haven't adequately engaged in a transparent way with the relevant communities. I also think we should have done just 1 or 2 NSCs initially to test the concept as it is an experiment for NZ. It will be vital to make sure that the NSCs don't soak up all MBIE funding and that a significant (and increasing) amount stays in the competitive pot.



One of the less well recognized concerns is the sheer cost of governance. In the Biological Heritage challenge, there is ~\$1m per year assigned to governance, but only ~\$2m to the science program (and this also has to cover non-science costs, such as overheads). The rapid proliferation of CoREs, NSCs and other 'facilitating bodies' is causing a huge drain of 'science' funding into non-profitable management structures. Most of these organization's science goals could be managed through existing frameworks, with a concomitant reallocation of substantial funding to actual scientific research.



The topic areas of the ten identified challenges is so broad that virtually any research is possible under this umbrella. However, the amount of money initially indicated (approx \$3 million per year per challenge) would not, and could not, result in any huge impact on any problem that needs solving. The decision to 'roll in' current MBIE contestible spend in the 7 areas outside of the 3 health challenges is also potentially disastrous. The processes for determining the research plans for the challenges is anything but robust, democratic or contestible. In the challenge I have been involved with, an enormous governance structure has been invented, and after 18 months of discussions, there is still no research plan. The proposed mechanism for determining the entire research plan for the next ten years is in-house and controlled by a small group of self-appointed individuals. It looks and smells bad, and if this proceeds, then there will be no contestible money in this area for a decade, and all research funding will be allocated by a small group who will carry out their own review of any proposals. After almost two years, not a single dollar has yet gone to a research project. This process is by far the worst thing I have ever been involved with. After a lifetime in NZ science research, the National Science Challenges are indeed challenging, but they are also completely destructive, and a complete waste of time and energy. We owe our younger scientists more than this. I note that the government is looking at science investment more broadly at present, and is also trying to encourage students into science careers. The National Science Challenges are not going to help (in their current chaotic form).



The first attempt at the NSC in my area was fairly heavily captured by a small group of people who hadn't picked up on the outcome for NZ bit of the Challenge. MBIE and the international panel kicked the first effort back; an improved version emerged, and seems to be going somewhere. That's actually a healthy piece of process. In the long run NZ could do with setting up a Research Council, so that we can get better gains from scale in organising science, and so that the governance wheel doesn't have to be reinvented every time there are new initiatives. But that's beyond the scope of this survey...



Transparency and process were lacking. The choice of people to be involved with workshops and then who actually took control of each challenge were not transparent and clear.



Let's give them a chance to work.



I've been involved heavily with [one of the challenges], and am especially disappointed by the rush to develop an framework, resulting in one that was drawn too much to current perspectives, a very much through the eyes of a select group [...]. There was not enough thinking about different ways to achieve bigger solutions given the scope and timeframe of the Challenge. We may have built ways to achieve that into the Challenge, but given the lack of transparency so far I do not trust that they will be followed through on. [...] there should be more focus on transparency to force lead agencies to behave properly to achieve the mission, rather than to increase their power or funding.

In my experience of over 20 years in the NZ system, no initiative has done more to promote distrust, waste time and work against cooperation within the science community.

20-100 hours involvement in preparing proposals

I work in science management in a University. Science challenges could be a good way to deliver research benefit to NZ but there are too many, each one is attempting to do too much with a relatively small resource. The process was rushed, poorly thought through, reinforced areas of current research rather than driving towards something new and very time consuming.



The whole process was an appalling top-down exercise. Just to add salt to the wound, almost all of the initial resourcing is going into setting up 'governance'. I hold no hope that any useful resources or science will come out of these 'Challenges'.



A lot of work for zero benefit, and given the amount of money available directly in each challenge, there is a large discrepancy between effort and reward. And the whole thing is run by the standard old boys club anyways.



The process surrounding NSC-10 appeared to me to be haphazard, with the overall direction of the Challenge chosen based on rushed discussion and vested interest, rather than any detailed critical analysis of the scientific case.



There is no way that this process will result in either the key NZ stakeholder priorities being satisfactorily addressed, or the best teams coming together.



I see little value in the 'packaging' of Science in this way, and do not see that creating apparent collaborations can possibly work. In my view, the challenges have been a complete and total waste of time and money.



The National Sciences Challenges are conceptually a reasonable idea. New, risky science and co-operation across disciplines and institutions - Fantastic, it's what all scientists hope for! But this is tempered by the poor funding of science in New Zealand and that all institutions (CRIs and Unis in particular) see the NSCs are (in-part) new money and therefore are (unsurprisingly) looking to secure a sizable piece of the pie. In trying to secure the pie, the NSC objectives have been tempered and are generally extensions of current institutional programmes rather than game-changing research. For my part, the NSC I was involved in was dominated by the Big Dogs, being very conservative and trying to balance both their own institution's research inclusion while not offending the other major players. There was minimal, bordering on no, communications to the "smaller players" particularly after the first meeting or two. This was a disappointing, particularly as there was a great deal of enthusiasm from the younger scientists initially discussing possible new research avenues. The final result will be that the NSC will be pedestrian, the objectives are obtuse and 'coveralls', and I think will miss a great opportunity to solve many pressing problems. Finally I have very little confidence that MBIE have the staff or the skills to be able to scrutinize the NSC set-up or assess its merit, beyond adding an administrative burden for reporting that will consume a sizable chunk of funding and thereby reducing the efficacy of the NSCs further.



The whole challenge concept and process are a completely unnecessary waste of time and funds. We already have an overly bureaucratic and over-crowded science funding system. The challenges just add another layer of bureaucracy which ultimately will mean less science being done.



The original process of selecting the challenges seems, in my opinion, to have highlighted some major themes worthy of the investment of public funds. From there, things have gone swiftly downhill. The allocation of challenge funding to research teams has been a disaster: no competitive peer-review or assurance of quality, total dominance by existing providers, exclusion of small but high-performing groups not already receiving MBIE funding, no clear demonstration that strategic priorities are being addressed by scientifically robust research,... Instead of being visionary, the challenge process seems to have ended up simply providing highly politicized funding on scientifically unchallenged grounds to groups attempting to compensate for their recent declines in MBIE funding. MBIE lacks the scientific clout to identify high-quality research groups or

research opportunities, without total reliance on advice it obtains from existing providers. It also seems to lack the bureaucratic mana required to argue on behalf of the scientific community for better decision-making funding allocation processes.



People did their best, sometimes at great personal sacrifice, but it was a rushed job with administration doomed to fail by the Minister's unrealistic demands. The process in some challenges was near-totally dominated by universities with minimal influence of industry and industry-connected research. In itself that is not a bad thing, but the results so far have an air of unreality and last-year's-US-trend about them. The usual MBIE style of elimination by anonymous committee without debate applied.



The Challenges are not working in the ways in which the government expected. The Health Challenges - of which I am most aware - are replicating research teams and projects already existing, with little real interdisciplinarity and almost no real engagement from endusers. It is always dangerous to expect researchers where there are fewer well established researchers (Maori, Pacific, qualitative) at Professorial level to really be able to engage with larger project teams. It would be more efficient to offer contestable but defined projects across a range of topics that together enable the evidence base to grow; evidence shows that more bang for the buck is received this way.



The Health Science Challenges were captured by small groups, contained some funded business as usual to maintain impetus for those groups, and ignored major relevant expertise from other research groups.



The process was a complete farce, and it's clear that vested interests were able to hijack the planning sessions and move forward with their own agendas. The result? A complete lack of any "challenging" science being planned, and the exclusion of those with risky, cutting-edge ideas.



The National Science Challenges have turned out to be an immensely powerful initiative, likely to bring benefits to all NZers as and to NZ science. However, it appears that a lack of time for planning and lack of resources has resulted in the process being less effectively managed and less inclusive than it should have been.



Any new science funding in New Zealand is a blessing. Take a look at any of the other funding schemes and they are all deeply dysfunctional and merit equivalent criticism. Take Marsden - you get all the leading scientists in NZ to prepare proposals then you throw over 90% away, then you get the remaining 10% to spend hours grooming a detailed proposal then you throw over 50% of these away. You also involve many of the leading scientists in peer reviewing - so waste more of their time scattering the funding crumbs. I estimate that Marsden wastes the equivalent of 20 full time science positions on its contestable process each year - really is that any better than what we have seen from the NSC so far? If the Society is going to take on the science funding processes in NZ it needs to

look at the existing systems which are grossly inefficient and don't deliver good outcomes for NZ on the whole.



The most important point is this: I believe that the process of trying to implement the Challenges will end up costing more than the so-called new money that is being put into science - the costs in my one organisation have been enormous, and we're not even close to having funding to actually do science (we still have to get the Challenge governance structures built and implemented, and then go through some form of bidding process). I challenge the Minister (or anyone else) to prove this point wrong. The relentless and mindless pursuit of change in the way that we manage science in New Zealand is institutionally bankrupt and, at times, verging on corrupt. Although there have been some committed, informed and well-meaning people involved in science funding bureaucracy, I also believe that there is an entire cohort of mid-career people incumbent now whose only experience is to implement change; they will not be going anywhere in the near future and I see no light at the end of this tunnel. The choices for me are: get out of science, get out of New Zealand, or hunker down and disengage. I have made the conscious decision to disengage from science bureaucracy in New Zealand. Regarding the top-down approach to enforcing inter-institutional collaboration that features in the Challenges, this is bound to fail. For about 15 years we have existed in an intensely competitive environment and, in some cases, institutional leaders have actively sought to cultivate competition (they have been selected to do just that). This ethos and associated mistrust cannot just be changed with ministerial edict. In contrast, I note that the large science programme that I lead for 12 years collaborated massively with other researchers all around the world and, on average (and conservatively), doubled the programme budget each year through international in-kind co-funding. We were highly collaborative! I very strongly support the calls to greatly increase the value of the Marsden Fund - it is not perfect by any means, but in terms of stability in management and aims, and alignment with international best-practice, it has been a (very small) beacon of light through the last decade or so.



Workshops seemed biased from the start, with some sessions not capturing all that participants wanted. In biasing the early stages I feel we have lost some opportunities to improve NZ. Subsequently, the NSCs seem to have become bureaucratically burdensome, with significant sums earmarked for establishing boards, networks, frameworks...not the actual research... all could have been streamlined more effectively with clearer and better direction from MBIE at the start. All of this when investment in science will seemingly decline from 2016, if the NSSI is to be believed.



The process of defining the scope of the challenges has been a joke and we end up with just all the average research we do already. It is just more of the same. The program should have been called National Development Challenge because that is what it is. Trying to solve societal problems, ideally before the election.



(1) Management of the NSCs is a shambles: no sensible strategic implementation plans were included, with pretty much all management thrown away from MBIE

at the science leaders who (a) are not qualified to best fulfil the strategic and management functions involved, and (b) are incurring a further huge opportunity cost wasting their time on NSC mess rather than getting on with the (ridiculously underfunded by comparable nations' standards) science and innovation that NZ is actually good at. (2) The actual NSCs set are blinkered in their focus, with stunning omissions regarding direct climate change, energy and sustainability issues. (3) The suggestions from MBIE/Minister Joyce regarding the potential for future funding to be aligned with the NSCs (even if this is just implicit pressure on scientists to write NSCs into their proposals) would compound the unduly limited NSC focuses for even further destruction to the country's science. (4) The feeling raised by the NSCs is that rather than our political leaders discovering what the country's scientists are actually good at, and supporting this science excellence alongside raising the profile with the public of their internationally renowned work, government has developed a media-focused means to set some shallow goals, laundered the list through a process focused on a few key scientists and delegated away the management.



I feel the challenge was steered by existing vested interests, areas of existing research and development and the power that those in charge of these interests had over their peers. In many ways this did not reflect what challenges NZ faces but rather what interest group had the strongest sway over others and how many votes could be raised for that particular focus. I am not convinced that scientists are the right group to choose the challenge. Perhaps the system should be turned on its head, where other groups make a selection of subjects they believe NZ faces and the scientists then decide where a solution can best be achieved.



My main interaction has been in relation to the outreach/science communication aspects. The individual science challenges have been asked to develop this area, even though there are probably significant overlaps between the needs of all of the challenges. The responses of the challenges has been quite mixed - and most of them are so busy with the establishment of the administrative structures and science programmes that they have not been able to look at the outreach area. MBIE should have taken more of a lead in this area. The Science in Society side of things that was launched this week has some very positive aspects. In particular it is a tremendous step forward to have MinEd and MBIE actually working together in this area.



My comments relate to NSC10. Here the areas appeared to be already pre selected and related strongly to those person proposing them! There seemed to be little engagement with industry. Interestingly my research is highly relevant to NZ industry and has led to two start up companies, but my experience and track record was essentially ignored. The emphasis seemed to me to be on patch protection and more of the same rather than any serious attempt to address the science needed for NZ to move forward and prosper. For NSC 10 I can unfortunately see another failed IRL scenario emerging! For the sake of R&D relevant to NZ industry and prosperity I hope something better emerges.

The process was very inclusive. Whether the Challenges offer the right model for science that will benefit NZ in the future is far from clear. Collaboration is great, but given the funding available we may end up with small projects that fail to deliver the kind of step-change results that the PM's Science Adviser had in mind.

Comments limited to NSC 10. The Challenge (enhancing the capacity of New Zealand to use physical and engineering sciences for economic growth) is appropriate. The way the process was organised, managed and responded to was the problem. This included the failure of the researchers to understand that any proposal needed to address the Challenge (i.e. "the capacity .. to use .. for economic growth") and this meant addressing the question of how to enhance that capacity, not just proposing doing more of what had been done in the past (and had had relatively poor impact on economic growth). So the community of scientists carries part of the blame for the potentially poor outcomes likely from this Challenge.

They quickly morphed into engineering challenges... involving the usual crowd of big names leaving little for anything actually new to be discovered!

The NSC process was flawed from the beginning and so it is not trivial to identify the biggest or most important weakness in what has happened. To some extent one can accept that MBIE's timelines were forced upon them and from MBIE's point of view the sandpit process was an honest (if flawed) attempt to find the best research projects. What was much less acceptable was that "on the ground" the process was controlled by a small group of unelected scientists some of whom chose to promote their own or their institution's interests. Despite a veneer of democracy, the sandpit I attended was a farce because a small subgroup of the steering group pre-determined the outcome by selecting a majority of participants to support the desired outcome. The selected project in my opinion has little scientific merit and little possibility of providing a strong economic outcome - but strongly supports one CRI.

This has been a dumbing down exercise and a waste of time and money. The mechanism offered through the Marsden fund is really the only approach that ensures the very best science undertaken by the best science teams are engaged in delivery the best outcomes for New Zealand.

The process selected for the NSC seems poorly managed and monopolised by just a small group of people which made it very difficult to obtain a fair representation of the scientifically relevant topics. Especially in case of the Deep South Challenge, it seems basically impossible for most scientist - especially the early career scientists - to have any significant input. It would be great if the process could be opened up and made more transparent to allow for a more balanced contribution and outcome. It at least appears that "back-room conversations" rather than a fair and open process determine the research proposals.

It seems that rather than focusing on good competitive science, conglomerates of scientists have been trying to divide up pies between them. There is no serious transparent peer review process, just lots of politics.



The challenges should be used as a case study in how not to fund research.



The initial bidding was captured by a CRI and the broader significance of it was not developed well at all until MBIE stepped in and brokered something new although the final was still constrained by those at the table but there may be opportunities between NSCs. I would say that the initial fanfare inviting public input was not been realised in new and exciting science. Seems the government has a large stamp on what they see as significant within their current framing of priorities.



I could write many pages here on how dissatisfied I am with the way the NSCs have been implemented. I have in depth knowledge of how one of the NSCs was developed and it would not be too harsh to say that the process is corrupt and borders on financially fraudulent. I think that if the New Zealand public knew how their tax payer dollars were being spent, they would be calling for Steven Joyce's resignation. In terms of supporting science in New Zealand, I cannot imagine a more wasteful and pointless process. In fact the NSCs are not about supporting science, they are simply about how to make more money for the country. The science is irrelevant. They should be renamed "National Party Policy Feed-stock".



The NSC are laudable for bringing new money to science. The mission-led focus is also appropriate. The missions themselves in so far as I'm aware are essentially business as usual and the money far too diluted to make any impact. The top-down process for these missions is again appropriate _but_ only of the top-down people have a suitable vision. One approach might have been to have picked 2 NSC and put half the \$ into that and the rest into Marsden. A key point is that there has been so much change in NZ science lately that a period of consolidation is vital.



Hoping this is anonymous, because I don't want to be quoted on this leading up to the election, but I believe that the National Science Challenges are a complete waste of time and money and will divert money away from good science and give it to people with the loudest voice. The normal MBIE process was better. Increasing Marsden, of course, would give the best science, but not targeted as Government desires. Regardless, I believe either route for the funding would deliver much more quality science and benefit for New Zealand than this squabbling mess that is a vehicle to ensure money goes to the mediocre.



I felt that the process was driven by a political agenda rather than by scientific needs



Even with somewhat limited exposure to the Science Challenges setup stages it is difficult not to rant. The National Science Challenges are a debacle. In brief, the

proportion of funds contributing to genuine scientific endeavor are minuscule compared to the administrative and bureaucratic component. A productive multi-disciplinary research programme is built on trust and long-standing (often international) collaborations; not the rapid mashing together of loosely related disciplines in the hope that enough bodies in one room will make a breakthrough with the cream squeezed to the surface. Picking winners and failing early are key, especially in the New Zealand environment where funding is short-term and relatively of low-value. True leadership in science development for this country will come from governance that takes, what is arguably an extreme view, and identifies a single key field of endeavor that we will pursue for the next 25 years. Not 8-12 programmes that are piece-meal funded, short term and at the mercy of a short-cycle election process. Succeed with focus, not scatter-shot failure.



These challenges are poorly considered and managed. They were a tremendous opportunity to challenge and advance science in NZ and the world. But I don't believe the way they have been implemented will go anywhere near realising this opportunity. They should have been run on a similar way to the Marsden fund, though the RSNZ. I've sat on one of the panels that developed the research proposal and framework and ended totally disillusioned with the process and fund. It will not achieve what it set out to do and represents little or no challenge at all.



There was a distinct lack of transparency in the decision making processes. Starting right from the formation of the panel of "experts". The lack of true review of the science is hampering any meaningful outputs from this investment.



The process is suffers from a complete lack of competition of ideas. At all stages, from the selection of the overall challenges to the development of projects and teams, the collaboration process has really been characterised by compromise to the lowest common denominator. The lack of competition and the inherent compromise means that teams are not challenged on science that lacks ambition or imagination, and that funding may be split in too many directions to be useful. This is a recipe for mediocrity. The process has also taken up enormous amounts of peoples time. Institutions have played along because being too challenging would leave them marginalised from a large source of potential funding.

Up to 20 hours involvement in preparing proposals

The apparent aims of asking big questions and getting interesting and useful answers is not achieved. The questions are poorly considered. They are very target structured, which is not real science - it is technology and development.



I heard, firsthand from two people who were on the panel, that the panel paid no attention to the public submissions. That public engagement campaign was a bit of a waste of money then, huh?



I strongly concur with the view that inventing another process, with little or no element of contestability, was a poor investment of the NZ tax dollar. Investing these funds in existing, properly peer-reviewed funding instruments such as Marsden, HRC etc would likely have given better returns.



Launched with half-baked public consultation run more as a PR campaign than real engagement, then followed by a basically closed-shop, invite-only affair. Inevitably resulted in same-old-same-old. Challenging ideas come from challenging collaborations and the process has failed to incentivise this.



I've tried really hard from the beginning to get involved with this. Every time I get an email asking for my involvement, this has turned out to be a pro-forma invite, not actually an invitation to participate. The 'challenge's have been entirely designed behind closed doors, by a select few. The processes have been a farce.



It was almost impossible to break into the challenges unless you were somebody who started one of these. It's political, not scientific.



I strongly disagree with the lack of competitive bidding for the NSC funds. Strangely, it is a socialist scheme run by a right-wing government.



It is a shambles and there is no obvious way for some scientists to become involved if you are not an established known scientist in the field.



This is a very murky and inadequate process.



Daft idea set-up by politicians and the muppets at MBIE.



In the interests of brevity. I think the the Government's intent is honest with a desire for new collaborative approaches to resolve what are considered "Big" challenges. However, I fear the Challenges are too big, lack achievable definition of scope and limits, and have insufficient quanta of funds available to achieve KPIs. Discussions of how, who & what research was to be conducted in NZ was always going to be a hugely contentious political event and become mired in uncertainty, particularly given the lack of definition for many of the released challenges, the need to nominate attendees to establish these, cost of associate oversight (and duplication), and subsequent relatively poor communication. I have issue with Q3; "the best way to organise research to deliver benefits to NZ" - which depends on what the anticipated benefits are, who is defining them and how they are measured. The arguments for more investment in fundamental science (e.g. Marsden, PostGrad numbers) should not be confounded with the intended organisation and implementation of NSC - other than from the perspective of opportunity cost, and reflective of the chronic under funding of STEM in NZ both from Gov't and commercial entities.



The setting up of the NSC have not at all been a transparent process. It is extremely difficult to get ANY information on how to become involved in a NSC.

There was absolutely no information being filtered back to many researchers who would potentially play a very active role. It appeared on the face of it that the people who become involved in each NSC were pre-determined. I made initial enquiries but in the end, just gave up due to lack of information, a seemingly biased system and the sheer time-wasting that was involved in trying to engage in the process. My research is directly aligned with two NSC and I am not involved with either of them. I am extremely fortunate to be undertaking research that is supported financially by industry and have recently been awarded a Marsden grant. Ironically Marsden grants hold the most prestige in New Zealand, but seem much easier to obtain than one from a NSC, unless you are one of the pre-determined. The presentation given by Prof Sir Gluckman before initiation of NSC explained that this fund was not contestable, but more a shoulder-tapping exercise. I believe they have created just that. Unfortunately, this type of shoulder-tapping system breeds people and organisations looking after their own interests. In my opinion, it does not foster good science, nor necessarily science from the best researchers.



Many aspects of the NSC's remain a significant mystery to me, both nationally and within my institution. It seems difficult to locate any information/ updates/ who's doing what.



So far as I can see the "Challenges" are not really challenging, they seem to be a way for taking existing research and putting it under new umbrellas. I also have the impression that MBIE are not equipped to deal with the high-level science aspects (ie. to provide a neutral leadership with the intention of gaining the best outcomes for NZ science) and that instead the "Challenges" have been captured by groups with a strong degree of self-interest, with little or no scope for genuinely innovative new approaches from new groupings.



I think the whole thing was a huge waste of time.



The Resilience to Nature's Hazards proposal theoretically has potential to add to the already world-leading work New Zealand scientists are doing in this area. However, the convoluted and lengthy process, with uncertain criteria and direction from MBIE has lead to most scientists involved feeling disheartened and keen to work on anything but the science challenge quagmire.



The key issue is contestable versus non-contestable funding mechanisms. Under non-contestable funding systems the quality of research will be lower than for contestable because non-contestable funding limits the diversity of ideas being put forward, involves consensus and compromise (encourages mediocrity), risks capture by vested interest groups and excludes other groups who then suffer and information and influence disadvantage, and creates conflicts of interest whereby those involved in designing research programmes are also the beneficiaries.



My direct involvement with the NSC has been once removed, with involvement being in my CRI and meetings with colleagues. I have watched and listened as the Challenges evolved from the initial guidelines, where discussions were focussed around how to include new, big thinking science, into the Challenge areas, to later meetings where my senior colleagues became more despondent and cynical about the Challenge concepts and ability to integrate (new or existing) science ideas in to the changing guidelines and feedback provided from MBIE. It seems the Challenges have moved from an opportunity to carry out new, big, exciting science to a larger focus on knowledge transfer to the public. Knowledge transfer is very important, but where and how will new science research get done?



I have taken very little part in this process because it has been very unclear from the beginning (and still is). The common belief among my colleagues is that key decisions re-funding allocation have already been made and that everything else is just an act to legitimize these decisions: our involvement would therefore be a total lack of time. I may be wrong (I sincerely hope I am as NZ needs a coordinated approach) but I simply do not have the time to invest in this (most productive scientists won't). This process therefore appears to me as a very top-down approach that has been disguised as a bottom-up initiative. In frank words, it seems like a 'big-word politician-pet project' rather than a carefully-thought initiative understanding the inherent risks and limitations associated with modern research and how to manage these.



The lack of coherence and leadership to each challenge meant there is no clear way to engage. I see the need to keep the inside group (who seem to get all what is going) away from being the directors but there should have been: * invitations to provide leadership and engagement by independent organisations; * less politicking and more focus on good science. Ubiquitous science areas such as I am in (Quantitative analyses) seem to be unappreciated. *



The NSCs are transferring some control of funding from 'committees' and 'boards' of supposed elites who had no real understanding of the proposals they were judging to another small number of elites who then will ostensibly be deciding how the funds are distributed. Those who are doing research will still have to beg and argue that their work is worthy of funding. Researchers time is wasted either way. All that has been created is more 'jobs for the boys.' We have a system in NZ where the more senior a person becomes the less time they spend thinking about research and the more time they spend producing applications that have small chance of success. The NSCs are no more than a token gesture by the latest in a succession of governments that simply have no clue about how to obtain research output from funds. The politicians egos are thoroughly padded by such seemingly grand schemes. Those who are actually positioned contribute to the country by producing quality research lose out - the result of which is cynicism and reduced productivity. As a country we cannot afford to get too far behind in scientific and engineering progress. Our current strengths are based on over one-hundred years of sophisticated research. In the last decade the report from the RSNZ showed that since the 1970s our position has steadily declined due to systematic poor discussion making. The decline was most recently exemplified by AgResearch's announcements regarding job relocation. The effect

is only to reduce capability which can have dire consequences. It is of little surprise that post the decimation of the food safety group and Ruakura, Waikato (ostensibly a relocation to Palmerston North last decade) was followed by the testing errors and botulism scare at Fonterra, where AgResearch testing was implicated. As a county we cannot wear these effects forever. NZ sits consistently at 1/4 from the bottom in the OECD in terms of research funding as a percentage of GDP. At this position we are getting poorer by OECD measures, and frankly we deserve to be. What we need is simple. First direct funding to research organisations, and second much more funding. We need much fewer contestable funds and instead money needs to go directly to those who do the research to free up their time to do the work that they are there to do! Furthermore, one only needs to ask senior scientists at any organisation to learn that it is uncommon for more than 30% of any new funding to actually reach the research group budgets. The NSCs have been an obvious and unfortunate time suck for certain individuals, and the total amount of money is not going to spread far enough. It is doubtful that the greater proportion of that money is actually going to pay for the research that it is intended for.



Lack of transparency and fairness. Become monopoly by some senior scientists not based on research quality.



Rushed through process, badly designed. Money is better spent in Marsden projects.



The challenges were too vague and it was unclear what MBIE and the government wanted from them. Which is why they were so poorly organised and there was a lot of confusion from the scientists over what was required. For the challenges to be effective they should have more specific focus and outcomes.



The funding situation for Scientific Research in New Zealand is desperate, and this was reflected at the National Science Challenge meetings I attended (3). It will be a challenge to develop effective collaborations or develop research with significant outcomes under this initiative when basic research infrastructure and project support is so low in New Zealand.



The National Science challenges are just a means of providing funding opportunities to existing researchers (the old boy network just like all other major funding sources). They do not help the nation as a whole or provide opportunities for excellent scientists working on excellent science in other areas. I think this whole initiative is a waste of tax payers money. Science funding should be competitive in that good science in what ever field is supported.



So far it has been a huge consumer of time and resource, with what looks to be a tiny return in terms of research funding. From my limited involvement, it seems as if MBIE is simply washing themselves of the management of research funding by devolving the work for 'free' through scientists and researchers. All it is doing is soaking up significant time of these scientists and researchers with paperwork

and meetings, and adding in further layers of politics to the scientific community - which is the last thing it needs.



I think the challenges have stimulated some nationwide discussion regarding science. This can only be a good thing. I have been involved to a limited extent with NSC10. Several meetings with many scientists across NZ have been interesting, and have provided a platform for cross institution collaboration and discussions. Reaching agreement on the focus for NSC10 was always going to be difficult given the broad range of fields in scope and the large number of scientists that participated in the various meetings, but I believe a reasonable compromise was reached (I was not involved in developing the final proposal, but I am broadly aware of the outcome). The success of the NSCs will depend on supporting the highest quality science (would benefit by adopting the assessment practice of RSNZ) and ensuring public engagement and benefits are realised.



The Science Challenges had a good goal but implementation has been poor with unclear pathways on how to provide input.



I think the challenges are a potentially interesting way of allocating a small amount of new research funding. They should have been trialled on that basis. They have developed to become far too bureaucratic with substantial administration costs. It is not at all clear how the model will produce innovative high quality science.



"Design by committee" process seems to lead to some strange trade-offs and outcomes that possibly don't suit anyone particularly well. The process was very political, and outcomes didn't seem well correlated with best science, but rather who was driving the process and who was most vocal.



This whole process has been a shambles. I am a top scientist in NZ (several Marsdens and various national and international awards) but received no invitation to be involved in any way in the two challenges relevant to my area i.e. biological heritage and primary production. The overhead in setting up and running these challenges is huge. I understand that of the new funding for Biological Heritage around \$1m is going to be spent on governance and just \$2m on the science. Public release of this financial breakdown would be of great interest to the science community. The track record of some of the scientists selected to participate in the first round of funding in Biological Heritage is rather poor. How can we get ground breaking and innovative science done if we do not support the best and the brightest. It is quite disheartening to see so many early and mid-career academics in my Department starved for funds to do their research when funding is being squandered this way. I am at a stage in my career where I am not so concerned for myself but it is my colleagues I feel for most. Many have great ideas but struggle to be successful in the very competitive Marsden Fund yet this new fund provides no hope for them. The process has been far from transparent with selection of organisations and scientists very unclear. The Callaghan Innovation Fund is also a huge disappointment. I have

had approaches from two companies wanting to put up applications to this fund and wanting me involved. In one case they were more or less promised the funding as long as they could find a MSc student. The project was OK but hardly innovative or ground-breaking. In the second case I thought the proposed science was flawed so got dropped in favour of another organisation willing to support the proposal. The Callaghan fund is no more than a fund to subsidise R&D in the private sector with very weak checks on the quality of the science. It pains me to think what great science could be done if another \$100 m was to go into the Marsden fund.



I believe the proposal process has been hijacked by groups that already existed and what we are seeing is groups proposing their pet science mainly with their buddies. It's not going to be rigorous, high quality science addressing important questions using the best teams. I see this process as a missed opportunity. The assumption that scientist who for decades have had to live under a competitive funding model which discouraged widespread collaboration we going to overnight form new more collaborative partnerships was naive.



Put the money into the Marsden fund!



Concerns around the lack of contestible funding available, and the transparency of the process allocating funds to groups.



The National Science Challenges involve too little science.



Seems pretty clear that a fair chunk of the money is going to be wasted in bureaucracy, institutional-competition, and overheads, at the expense of science. Fund more science, less management.



Disenchanting for early and mid-career scientists as the process occurs behind closed doors. The money should be distributed through Marsden (and HRC for health challenges) where there is an existing transparent process in which funding goes to the best science, not a political charade.



I have a strong research record in freshwater ecology (80 plus papers) but have been unable to gain any involvement in the land and water challenge despite trying to engage with the in- group.



Yes. I'm an Early Career Researcher (ECR) and attended the ECR conference in Wellington in May this year. At that conference it became obvious that especially ECRs have no idea about how to get involved in any of the NCS and where to start. Everything happens behind closed doors, nothing is public and all what we know is what was shown on TV ads. I think that for us ECRs it is very hard to get involved and to even know what is happening and what research might be done where our expertise could fit it. During the conference you really could feel the frustration among the ECRs but also the senior scientists. Where do we get information about the challenges from? How do we know who are the leader of the challenge? Why is no-one contacting anyone?? If you as an ECR don't know

anyone who knows a little about what's going on, you are lost because there is no open discussion or anything going on... very very secretive.



In principal I think that the NSCs could be good way to organise some funding in the New Zealand science system, particularly if the process had followed the initial rhetoric. However, viewed from the sideline, subsequent management appears to be completely at odds with the stated goals of the NSC policy.



I have lost all my grant funding after 21 yrs of FRST funding, because of the latest rejigging of government funding and am taking forced retirement from paid research. FRSNZ



I think the people leading our challenge, and working within the different teams, have responded very well to this process. Everyone has tried hard to work in a collegial and cooperative manner; more so than I actually thought would happen. People from very different perspectives are required to work together, and while this is a good thing, we have not been given the time required to develop a proposal that really brings all of our knowledge and skills together in a coherent manner. More troublesome, however, is the fact we actually already possess a great deal of knowledge about the challenge topic, but the knowledge is not politically correct – in the true definition of the term. So we're now proposing methods that align with the government's ideology, disregarding a lot of the existing scientific knowledge. I don't see the outputs from this challenge process making a real difference to the problem it is meant to address.



MBIE's insistence that every man and their dog in NZ must all work together and get a dollar fifty each for their efforts is simply not worth the pain of being involved. It will not work. The powerful will get all the money and the rest will waste a massive amount of time before realizing all the money will go to the powerful people anyway.



As an early-career researcher, the only way I was able to find out any information about how the NSC proposal relevant to my area was being developed was through overhearing more senior scientists who are my colleagues. My contribution to developing the proposal relevant to me came only by helping those senior colleagues, rather than being given the chance to contribute for myself. This is a very discouraging way to develop the challenges, since they are long-term and they will need to motivate and engage early-career scientists to be successful. Now, I cannot see how this challenge is relevant at all to me, and from the specific areas included in the proposal, it looks like it was captured by scientists whose areas are considered by some as particularly sexy at this moment in time. It thus completely ignores large programmes of research where NZ has serious credibility developed over decades.



This seems almost exactly the wrong way to spend valuable research dollars in the interests of New Zealand's future. There seems very little new science (same old same old) and the idea that we will solve, or make a reasonable contribution to the solution of Climate Change (or any of the other challenges) with the

budget set aside is frankly ludicrous. I know individual researchers in these areas (e.g. big data, health analytics etc) in the US with an order of magnitude more funding. Our opportunity as a country lies elsewhere (and the best spend is probably in a modified Marsden type environment)



Too much beaucratic interference.

Not a bad idea conceptually but as a way to manage research? Vast administrative cost and a lot of effort to get a very small amount of funding. I predict spread too thin for any meaningful result.



The whole system was a joke with administrators deciding in advance who would be involved and in what capacity. The amount of money involved was so small it lead to infighting and fragmentation down to unworkable units.



The NSCs have been little more than a farce at every step, from the design and selection of the challenges, to their implementation thus far. What is worse, it seems unlikely that any lessons have been learnt from the long list of mistakes that have occurred, and it seems that the NSCs will continue to be a waste of money and time for sever more years.



The relationship between decision makers on what is to be funded and the groups that will benefit from funding is too close and appears riddled with seemingly unmanaged conflicts of interest at both institution and individual levels.



National Science Challenges seem to contain enough funding to win the next National Science Challenge contract



The 3 health challenges have considerable overlap with existing health research funding mechanisms. Setting up yet another bureaucratic system to manage these challenges will be inefficient and impose redundancy with the limited resources available. The mechanism of requiring scientists in each challenge to self-organize into factions is a poor way of encouraging innovation and addressing the key science objectives of national significance.



For NSCs to work they need to be meaningfully independent from contributing organisations. This is particularly the case with budget allocation. From our experience the budget is controlled by an elite, self-selected group drawn directly from the larger, more influential contributing parties. The Ministry must take more responsibility for ensuring the correct frameworks are established in order to avoid what is essentially a divvying of the spoils by the big players (which inevitably leads to an entrenchment of the status quo in terms of research directions). Secondly, challenge objectives must be brought in line with the available budget for these enterprises to be in any way meaningful. Too broad a scope will result in ineffectual investment in too many areas. MBIE should have taken more responsibility for guiding the objective-setting stage of the process. By relying to heavily on self-organisation from the research sector

they are now having to retrospectively address several issues that should have been foreseen and planned for up front. This is surely the result of overly hasty implementation to suit certain political purposes.



It's a fundamentally flawed scheme now run by a cabal of insiders. The investment is much better made in Marsdens and PDFs.

No involvement in preparing proposals

The topics available for the public to choose from seemed to be the usual set of things that a general audience is supposed to care about - many of them the kinds of things that are anyway funded by e.g. HRC. This was already disheartening. Once the challenges were chosen, the process of becoming engaged in the challenges was completely opaque. At no stage did I have any idea how to become involved, or indeed if it was even possible to become engaged as an individual scientist (it seems not?). Suddenly it emerged that various bids from the usual players were in (apparently - as mentioned, I have had no explicit information about this process) and being considered. Overall, an expensive shambles. While I appreciate the attempt to involve the wider public in scientific research in NZ, I think it would have been much more useful to have simply put the money into the Marsden fund. As an aside, I think the Marsden fund is doing a very good job at present of promoting the research that they fund, and are (I think) more visible in this regard than the science challenges.



A top-down approach to science funding (which is what the NSCs are) does not lead to an innovative country. Ideas from those at the cutting edge of a science field (i.e. early career researchers) were largely not included in this process. This is very short sighted and means that NZInc continues down a 'business as usual' path.



The National Science Challenges strive to put research into a few funding baskets that may help big teams or big budget or high profile topics (especially self-styled "state of the art" and/or high-tech research) while leaving little hope for those who have chosen, or found themselves in, a specialised blue-skies topic. To those who have (or, those who make the most noise), shall be given. Yet, blue-skies studies abound in NZ, especially in the natural sciences. We are used to "doing more with less," or making progress in spite of little or no grant support. The Challenges don't really offer anything special and in the long term may actually harm NZ sciences through administrative costs. As an alternative (or more realistically, a corollary), it would be very helpful to put more funding into Marsden - which is perhaps the only potential funder of good-ideas research in blue skies science. It is widely recognised that about 1/3 of Marsden proposals could be viewed as "must fund" - but never get support.



the Executive Summary of the Natures Resilience Challenge is ridiculous, it appears to be a very bad first draft of a proposal to develop resilience, and sounds like it is written by a group who do not believe in what they are trying to

sell. That comes through clearly, along with a lack of direction for what is needed in natural hazards science.

Scientific progress fundamentally depends on openness, transparency, communication and a diversity of approaches and inquirers. I don't feel the national science challenges uphold or contribute significantly to any of these principles.



I am very disappointed with how the "Resilience to Nature's Challenges" science challenge has been handled and am concerned at the time and money that has been wasted for a relatively small amount of new money, to date, and by all appearances, going forwards.



I would have liked to be involved, as I am a specialist in public engagement around science, but I had the feeling that the scientists themselves were addressing these issues in each challenge, although without the experience and expertise of social scientists such as myself. I read one of the drafts that came through and was actually horrified, that some of the engagement techniques, supposed to be new and innovative, actually referred to what we call the 'deficit model' of communication - the idea that people are just deficient in information and knowledge and will 'come around' once they are educated. This was disproven a long time ago. I have serious concerns that the Science and Society part of these challenges, which were supposed to include the expertise of social scientists, will actually be solely handled by scientists in a business-as-usual format. I also have concerns that in terms of understanding public perceptions of science, in the Curious Minds (science and society challenge) remit, that MBIE will be addressing it with a "survey", which is quite possibly the most ineffective way to understand people's views about scientific topics, and once again, precludes the expertise of the CRI scientists in particular, who have been experimenting with more innovative ways of engagement, but who have simultaneously been challenged by a lack of available funding. What I do like about the Science Challenges is the emphasis on changing 'business as usual', and hence, providing the opportunity for innovation. However, the issue of alignment of these challenges with current practices may be a tricky one. I am quite surprised to see that Climate Change was not one of the challenges, as were a number of other colleagues, when this is a key societal concern, has such serious implications at all scale levels. This reflects my general concern that the challenges were already pre-determined to some extent, and do not actually reflect all the major issues that face us as a nation.



It seems to me that this is just another way that politicians can demonstrate to the public that they are saving money by 'targeting science better' so they can reduce taxes and get elected etc etc. There is no mention anywhere of fundamental research anywhere. I suspect that none of this 'Challenges' business will result in an increase in science funding in real terms.



A completely shambolic process as far as I can see, falling between the two stools of actual science projects that have a chance of success, and more money to broad areas, and showing every sign of becoming an administrative and

accountability nightmare. The final development seems to be a decision that only those who know nothing about the subject should be involved in setting research directions.



My impression is that the process and expectations are flawed. It has taken decades to get NZ funding systems that work (mostly) and are understood by applicants and stakeholders. To expect that a new system can be created and be perfect in such a short time is questionable. The cost and hassle to research organisations thus far does not seem to be beneficial to them or NZ.



It would have been beneficial to have more open forums for non-leaders to engage in the proposals.



I am an early career researcher who returned from overseas a almost 3 years ago to develop my health research program in NZ. It seems that the development of the Healthier Lives Theme (and other themes) has only involved a very select group of senior scientists from the various research institutes/universities. It has been extremely difficult to find out information about the initial discussion groups and how to get involved (My university has not been helpful). It appears from the outside that these Challenges are another way to support well established scientists further their existing research programs rather than invite new innovative ideas. I hope that I am wrong but it does seem to come down to who you know rather than what you are doing. A well-respected and senior scientist who was involved in the initial meetings of one of the themes reported her disappointment at the development and direction of her theme and advised me not to bother trying to get involved; rather concentrate on doing my research and not waste my time with these initiatives at this stage. I have followed her advice to date but would prefer to be involved in any initiative that is going to play a significant role in my career long term.



Science funding should be merit-based rather than subject to the whims of Government and politicking at high levels amongst senior scientists and administrators. It would have been much better for the science community if the money had simply been added to the Marsden Fund, for example.



Despite Sir Peter Gluckman's assertion that the NSC's would present a significant opportunity for early career researchers to be involved, in fact I found that the opposite was the case. As I have a limited research profile, and am at an institution which does not have a long history of research in my area, there was absolutely no chance for me to be involved in my research area, as the panel was already formed, and invitations to be on the panel or in any way involved required that you had to be on the radar of those people tapped to convene the panel. An absolute joke.



Continues the trend of concentrating research funding for the chosen few in politically favoured fields. This is not the most efficient way to get good science done in NZ.



I have had very little involvement with the Challenges. I've found it very difficult to understand how I can get involved, even though I work in areas relevant to the challenges. I think my institution did, in the beginning, work to try and get people involved with the Challenges. However, I do have several close colleagues who are very heavily involved in the Challenges, including writing proposals, and from what they have told me, the news stories are right. This is an absolute shambles. MBIE don't seem to know what it is they want from the Challenges. Countless hours were put into writing proposals for the challenges, and by the sounds of it, nearly all of them were thrown out by the various panels because they weren't what MBIE wanted, despite the Scientists working towards what MBIE had indicated the challenges were to be about. That's an excellent example of how wasteful the process seems to have been.



The Challenge topics and plans are not really very inspiring and they appear to be business-as-usual type science. We need some real and meaningful challenges that push the NZ science community into the future and are clearly transformational. The appearance of a collaborative NSC approach is more about existing groups cementing their current roles. At least in the old competitive system gave the opportunity for new people to get involved and it was a bit more responsive and nimble to change and new ideas.



The management of research funds by the entire research community, including Marsden & HRC, is non-transparent and not in the least bit encouraging of fresh ideas, and fresh faces. The system incentivizes "gaming" by senior researchers with long track records. A much better approach would be to have an initial short proposal (an expression of interest) that is entirely conceptual, with no citations, and no names at all, and double blind. Judge an idea for what it is worth with the reviewer entirely unaware of where the proposal is coming from, and with no trace marks in terms of citations (i.e. one step better than the peer reviewing in journals). If it is innovative and interesting then have the author submit a more detailed proposal, and then judge the proposal more on its technical merit than track record. As it stands the research funding system is a joke.



How much money has been wasted already? Typical New Zealand way of wasting money. Trying to invent the wheel and ending up with something that doesn't turn. Why can't New Zealand look at other countries how they make wheels and then try to improve it.



I think the National Science Challenges have been a huge waste of scarce research funds. As well, they have soaked up a great deal of immensely valuable time that should have been devoted to research on writing proposals that will not be funded. The National Science Challenges should be replaced by a new Applied Marsden Fund (possibly to be called the Callaghan Fund) that would be administered in exactly the same way as the current Marsden Fund. After some years of experimentation as to the best way to deliver funding for "blue-skies" research in New Zealand, the Marsden Fund works remarkably well, and has a high reputation both in New Zealand and globally. It currently has two problems that would be solved by the proposal of a new Applied Marsden Fund: it can only

fund about 7% of applications (I am a current holder of a Marsden Grant), and it cannot fund applied science projects. Transferring the National Science Challenges funds to a new "Applied Marsden" would solve both of these problems, allowing perhaps 15% of deserving proposals to be funded. The administration for the Marsden Fund now works efficiently and smoothly and could readily adapt and expand to include the new Applied Marsdens. I think that much of the money set aside for the National Science Challenges is destined to be wasted on an entire new bureaucracy, rather than spent on science.



The nature of some of the challenges was a foregone conclusion, given who was responsible for choosing them. There are whole sectors of science which have missed out (maths, for example), as the challenges are such that they do not cover all scientific disciplines.



I am new to New Zealand, but the challenges look very important. I cannot comment on the management.



Generally, the Science Challenges appears to be highly non-specific, and from an academic's point of view were very business-driven rather than appealing to blue-sky thinking. They were also rather parochial -- an academic thinks "what can I do for the world" rather than just his country. Surely New Zealand has much to gain by considering its science on an international playing field, rather than in its own back yard?



for too much money is being spent on bureaucracy and not nearly enough on science the NSCs are a closed shop for those in the "in" crowd if you wanted to take Peter Gluckman's advice and realign yourself to a challenge, there is no opportunity to do so



Perhaps the NSC could have worked if there was serious funding investment in them. The NSC are trying to encourage collaboration; but since they operate within a funding climate that discourages collaboration and are heavily reliant on the existing funding, they are doomed to fail the task of bringing together the best brains for the task. Governance of the NSC is exclusive and had managed to create a prolonged and ongoing uncertainty among scientists. The NSC represent a good intention, not well thought through, and the reasons for why they will have failed can already be analysed at the outset.



The level of engagement with young and mid-career scientists was very poor.



Rather than dreaming up useless ways to spend government funding for research, this money should go to the Marsden fund where funding for basic research is desperately needed. Or, how about postdoc funding, which is now near zero in New Zealand. I don't think the public needs to be deciding where research money is going...and the process for how the money is distributed as part of the challenges is just a joke.



The process has not been transparent, and it looks like most of the money has been divvied up amongst those in the know, regardless of whether is the most useful, appropriate, or innovative science involved. From the outside, it looks as though there has been no transparent process to build early- and mid-career scientists into the Challenges.



The Science Challenges have turned a significant part of NZ's PGSF (\$135M) into non-contestable funding. This can only result in mediocrity. The whole process of the Science Challenges has been turned into an exercise of cronyism - a potential disaster for NZ science and science investment. In numerous cases leaders in particular challenges chose by MBIE are not even leaders in their field - for example Antarctica.



It is hard to see how the National Science Challenges involve science (engineering and politics, yes, science - no), are challenging (seem to be geared towards industrial/governmental application of known technologies), or are truly national (seem to have devolved into local teams). This is the almost inevitable outcome of 'top-down' management of the science system, and it seems that the process has turned out to be even more bureaucratic and time-wasting than anticipated. I can think of two more effective ways of achieving the desired outcomes: 1. put money into a competitive funding mechanism e.g. the Marsden Fund, with the stipulation that it be awarded to genuinely multi-institutional projects, but otherwise following the same evidence-based & peer-review procedures as usual 2. put the money into existing Centres of Research Excellence, as postdoctoral and PhD student funding, particularly postdocs who are the most productive (more experience & maturity than a PhD student), time-rich and mobile (less responsibilities than an academic/scientist). Existing CoREs already work on high impact science, which is ultimately in the national interest, and are multi-institutional. The only down-side of this proposal (compared to the Marsden Fund option above) is that it doesn't allow for new collaborations/projects/ideas to emerge as easily or organically, so it is possible that research that is not captured by the CoRE model but still may be of significant national interest/benefit may not be funded. In either case, both of the above options are 'bottom-up' approaches, wherein the most talented and creative scientists with decades of experience in their fields (expert knowledge) have the best opportunity to make use of that knowledge and really push the boundaries of what can be achieved through science and technology.



Dislike the eggs in a few baskets approach. Dislike political management of science. Spread the money around more. Support more projects. Let scientists follow their enthusiasms, form their own alliances. More trust of them to recognise what is important (which can be defined in many ways). Pie in the sky.



There has been much said about the "Leadership Challenge", but, as usual, the policy on public engagement/science in society came out without good consultation. Turns out public engagement looks like a kid's kindling splitter. Is this public engagement? Is it even science? Surely the history of science shows that innovation comes when you have time to play, which to me translates to blue skies science, not picking winners...



I am retired. My experience of the process was through listening to conversations and reactions to the processes. It seemed to me that those managing the challenges were making it up as they went along so a number of players misjudged was was required. My other impression is that many more resources are now going in to managing the programmes and not going to the science. This is across all forms of research funding.



I have kept out of the issues - the National Science Challenges do not seem relevant to me.



I work at the applied end of research continuum. the National Science challenges are irrelevant.



If I were given a scientific paper to review that was written in such meaningless jargon I would reject it. If I were to be sent such a proposal to review I would recommend rejection If useful outcomes are to come out of implementation of the proposal, they will be because enterprising scientists and engineers have hijacked the money.



Getting the general population engaged in science is to be applauded. One can but hope that professional researchers will support any efforts to improve the scientific literacy of all New Zealanders. Negativity about the efforts of others is not becoming and hardly good PR.



The whole process from selection of the challenges to defining the scope of work they will undertake has not been transparent, and has failed to effectively communicate to the scientific community as a whole their purpose, how to get involved and how they will roll out. The program has severely failed the emerging career scientists in New Zealand by lack of involvement of their ideas, innovations and voice. The system has the appearance of a top down process, peopled by the favoured few who get shouder-tapped, rather than have any real contestable aspect to it. On the issue of the subjects chosen for the challenges, the panel has sadly failed to incorporate energy and climate change in any real way, two of the most important scientific issues we face as a nation and as a World. There is too much emphasis on health research (3 challengees are directly related to health research) which has led to suspicions on the panel composition and decision making process. It has been poorly managed and has failed to capture the national scientific voice.



1. In most of the challenges there is no science. These are more technological programs than anything else. 2. They are completely utilitarian. 3. There is no creative component, just 'business as usual'. A waste of resources. 4. Take a look at the "Grand challenges" that were set up in the 1990 by the american NSF.



From my perspective the national science challenge will bring very little to very few people, either scientists or in the community, assuming it's even remotely successful – those it does benefit will already be very well established/funded

researchers because they will have ready access to information about what is required which seems remarkably vague. The vast majority of scientists within NZ that spend a good proportion of their respective careers writing unsuccessful applications because the bigger groups already take the lion's share of funding from the RSNZ and HRC and more recently from smaller and largely philanthropic funding bodies as well. This in turn leads to the bigger issue of a very low investment in research and development from successive governments (v's the OECD averages) and currently exacerbated by the existing government which has created the farcical, attention grabbing headline titled the 'national science challenge'. At best the national science challenge, assuming it's remotely successful will at very best further support the universities to produce more PhD graduates who will in turn have to work overseas if they wish to utilise their training without creating ANY opportunities to either return or work in NZ.



I am very disappointed to read the executive summary of the "Resilience to Nature's Challenges" proposal (10th June 2014 version) and find that, despite my BA in English and PhD in Geology, I struggle to understand it, let alone find any reference to science at all. The document seems to be tripping over itself to show how new this proposal is and to win the world record for the number of times it can use the word "resilience" - at the expense of any useful content.



These challenges were meant to be collaborative endeavours, but in reality I've seen one or two institutions dominate the process to ensure that their science is included, to the detriment of others. The challenges have resulted in a lot of wasted time on proposal writing and administration and seem to be encouraging the exact opposite behaviour that they were intended to.



If the Challenges are run by the same researchers who already receive most of the funding from Government, then they will continue to receive most, or now, all of the funding, to the detriment of many New Zealand researchers who are doing good work and could do much better work if they were to receive a reasonable amount of funding. At one time, researchers with Marsden funding could hold up to three different Marsdens concurrently. They must have had a hard time spending the money appropriately. Luckily, the Marsden Fund removed this option of holding multiple grants. From feedback received from people who attended the meetings, the National Science Challenges seemed to be run by groups who already had support and weren't prepared to listen to alternatives to help New Zealand scientists across the board, rather than limit it to defined areas only.



The development of the National Science Challenges appears to have involved a non-transparent shoulder tapping exercise. Through some mysterious process MBIE chose "leads" who in most cases simply approached individuals they know to be part of the process without a open call for people to express their interest in being engaged. In general, people who would have liked to have been involved had no idea of how to identify the people to contact or were ignored. As a result of the insular selection process of selecting members of the development teams it is clear that only the interests of these people are represented in the proposed project areas, particularly as CORE components will be managed by the same

scientists. As such it seems that the bulk of NSC funding will be tied up in "business as usual" projects led by the same old people. There is no sign that research that aligns with the wider remit of the themes, but is outside the sphere of the science teams own interests, will have fair consideration for funding. Although competitive funding may be available the level of that funding is likely to be too small to adequately resource projects properly limiting the ability for new people to bring new challenging ideas into the "old boys" structure. One thing the NSC will succeed in doing is to dilute the already inadequate effective research funding resources in NZ by adding a additional administrative cost on funds that could otherwise have been applied to research.