IM4DC Evaluation of Impact

Researchers:	Daniela Andrei, Lena Wang, Jelena Opacic, Sharon Parker, Karina Jorritsma, Mark Griffin
School/Centre:	Accelerated Learning Laboratory
University/ Institution:	The University of Western Australia

Key themes:	Governance and Regulation Community and Environmental Sustainability Operational Effectiveness
Key countries:	General application
Completion:	February 2014

Research aims:

This research aimed to:

- Undertake a systematic evaluation of the impact of IM4DC courses, workshops and study tours on the practices, policies and culture of targeted developing nations, by conducting in-depth, semi-structured interviews with IM4DC alumni.
- Provide rich data for IM4DC to review the impact of their past programs, understand the extent to which intended outcomes have been achieved through these programs, and conduct strategic planning for the future.

For further information on this action research:

Contact person: Mark Griffin mark.griffin@uwa.edu.au

IM4DC

Action Research Report

International Mining for Development Centre

FUNDED BY

Australian Government Department of Foreign Affairs and Trade

Australian Aid

IMPLEMENTING PARTNERS

The University of Queensland Australia

The University of Western Australia

www.im4dc.org

Summary of Action Research Activity

IM4DC evaluation of impact

This project aimed to assist the International Mining for Development Centre (IM4DC) in understanding how its educational and developmental programs have contributed to the improvement of the practices, policies and cultures of targeted developing nations. In consultation with the IM4DC, the Accelerated Learning Laboratory (ALL@UWA) designed an interview protocol for program alumni to systematically address the key questions posed in the IM4DC Monitoring and Evaluation Framework.

Contact was made with 73 alumni and interviews were successfully conducted with 25 alumni. Twelve countries were represented in this sample, with relatively balanced representation of organisations (university, government, and NGOs). The results were mapped onto the key questions in the IM4DC Monitoring and Evaluation Framework and are summarised in this report.

Overall, the interviews suggested that IM4DC programs have enabled the alumni to apply their learning into practice and to bring about changes to their work and organisations. The analysis suggests that participants have developed leadership capability, initiated innovative activities and changes, strengthened their networks, and can potentially contribute to the improvement of the social, economic and environmental status of their home countries. Recommendations for further enhancing impact include: involving key personnel and decision makers in the IM4DC training; providing focused, systemic training to develop participants' change management skills; following up with alumni to support their change initiatives; and creating platforms to share innovative and effective practices among alumni.

The information generated through this project will assist IM4DC to engage in systematic reviews of previous programs and strategic planning for the future.

THE UNIVERSITY OF WESTERN AUSTRALIA

Achieving International Excellence

Accelerated Learning Laboratory

RESEARCH REPORT to:

International Mining for Development Centre

(IM4DC)

IM4DC Evaluation of Impact

ALL@UWA Team Members:

Dr Daniela Andrei

Dr Lena Wang

Jelena Opacic

Winthrop Professor Sharon Parker

Karina Jorritsma

Winthrop Professor Mark Griffin

February 2014

CONTENTS

EXECUTIVE SUMMARY 3

1. PROJECT BACKGROUND AND METHOD 5

1.1 PROJECT AIMS 5
1.2 RESEARCH METHODS AND PROCESSES 5
1.3 SUMMARY OF PARTICIPANTS 8

2. FINDING PART I. HOW SUCCESSFULLY HAS IM4DC ACHIEVED ITS OUTCOMES 9

2.1 THE INSTIGATION OF TRANSFORMATION CHANGE 9
2.2 BARRIERS TO CHANGES 15
2.3 WAYS TO OVERCOME THE BARRIERS 18
2.4 THE DEVELOPMENT OF LEADERS 19
2.5 INNOVATION IN MINING FOR DEVELOPMENT 21
2.6 CONTRIBUTION TO GOVERNANCE AND ACCOUNTABILITY 24
2.7 CONTRIBUTION TO SOCIAL, ECONOMIC AND ENVIRONMENTAL OUTCOMES 25

3. FINDINGS PART II. TO WHAT EXTENT DOES IM4DC MODEL IMPROVE OUTCOMES BY FACILITATING COLLABORATION BETWEEN STAKEHOLDERS 27

3.1 NETWORK, PARTNERSHIPS AND COMMUNICATION 27
3.2 EXPERIENCE INVOLVING IN IM4DC PROGRAM 29

FINDING PART III. TO WHAT EXTENT WERE THERE UNEXPECTED OUTCOMES RESULTING FROM IM4DC ACTIVITIES 31

4. RECOMMENDATIONS TO IM4DC FROM ALUMNI 33

5. CONCLUSION 36

5.1 SUMMARY OF FINDINGS 36
5.2 RECOMMENDATIONS TO IM4DC 37

6. REFERENCES AND FURTHER READING 40

7. APPENDIX: INTERVIEW SCHEDULE 41

EXECUTIVE SUMMARY

Successful training and development programs require thorough, rigorous and timely evaluation of their effectiveness in order to assess to what extent learning objectives have been met. To perform an effective evaluation, it is vital to not only gather participants' initial reactions and perceptions about the program, but also identify any changes in their behaviours and actions as well as the resulting impact.

This current project aimed to assist the International Mining for Development Centre (IM4DC) to understand how its educational and developmental programs have contributed to the improvement of the practices, policies and cultures of targeted developing nations. The information generated through this project will assist IM4DC to engage in systematic reviews of previous programs and strategic planning for the future.

To meet this above purpose, and in consultation with the IM4DC, the Accelerated Learning Laboratory at University of Western Australia (ALL@UWA) designed an interview protocol to systematically address the key questions posed in the *IM4DC Monitoring and Evaluation Framework.* The selection of alumni took into consideration coverage of countries so that there was diversity in the sample. Contact was made with all 73 alumni on the name list and interviews were successfully conducted with 25 alumni, representing a response rate of 34%. Participation was voluntary and responses from alumni were kept confidential. Twelve countries were represented in this sample, with relatively balanced representation of organisations (university, government, and NGOs). Alumni's responses were transcribed and analysed. The data was mapped onto the key questions in the *IM4DC Monitoring and Evaluation Framework* and is summarised in this report.

The focus of the interviews was to look at changes in work methods/practices that alumni have implemented in their workplace. In brief, the results from the interviews indicate that participants reported initiating and implementing positive changes, despite only relatively short period of time have lapsed since participants returned to their home countries. All interviewed alumni have reported initiating at least one change at their workplace. Analysis of these changes suggested that changes were initiated and/or development occurred at all levels including: changes to individuals themselves (e.g. development of a new mindset, changing work methods); changes to their teams/workgroups (e.g. training team members, increasing collaboration and teamwork); and changes to their organisations (e.g. building networks and engaging external stakeholders, setting up new mining-related facilities). These findings suggest active engagement and strong motivation amongst IM4DC alumni in terms of transferring learning back home to improve their work practices. While it is still at the early stage for more transformational changes to take place and for broader social, economic and environmental impact to be generated, we have observed signs that some alumni were attempting to improve education, policies and regulations in their respective job areas. If similar activities continue to happen and if more staff can be

trained up to the level as the alumni, positive transformations and long-term impact are likely to take place.

The interview data suggests evidence of competencies in alumni's leadership capabilities, particularly in terms of the interpersonal aspects of leadership, such as developing networks, managing human capital, influencing others and leading one's team. There is also evidence that many of the changes that alumni have initiated can be considered as innovative, and most of the changes were already at the implementation stage, which is a more mature stage of the innovation process. This suggests that alumni were able to quickly act on their initiated changes and pushed through to make them happen.

We also asked alumni about the types of networks and collaborations that might have been affected because of attending IM4DC programs (i.e. Finding Part 2). We observed the formation of various types of networks, with particularly strong focus on local network groups and communities (e.g. University of Philippines Community, Zambia Australia Alumni Association). Relatively fewer networks have been formed and maintained across country boundaries, which is likely caused by constraints in cross-national communications, and challenges of cross-cultural communication. Our interviews suggest that IM4DC could potentially focus on strengthening cross-country networks to foster collaborations and partnerships that have broader impact.

Overall, the interviews suggest that IM4DC programs have enabled the alumni to apply the learning into practice and to bring about changes to their work and organisations. Our analysis suggests that participants have developed their leadership capability, initiated innovative activities and changes, strengthened their networks, and can potentially contribute to the improvement of social, economic, environmental status of their home countries. We nevertheless make recommendations for further enhancing the impact, such as: involve key personnel and decision makers in the IM4DC training; provide focused, systemic training to develop participants' change management skill; follow up with alumni to support their change initiatives; create platforms to share innovative and effective practices among alumni, among others. These initiatives would collectively facilitate the achievement of transformational changes in the targeted countries over time.

These conclusions need to recognise possible limitations in the methodology, including that the alumni interviewed might have been more positive than the broader set of alumni, and the retrospective focus of the interviews. To ensure more comprehensive and objective assessment of change in the future, we recommend future evaluations to a) target a more representative sample of alumni; b) measure participants' actual behavioural and performance change (e.g. using multisource and longitudinal assessment); and c) regularly follow up with alumni, either through interviews or surveys, to track their changes and development over time. Such evaluation techniques can be built into all training programs.

1. Project Background and Method

1.1 Project aims

Established in October 2011, the International Mining for Development Centre (IM4DC) organises and delivers a variety of mining-related courses, programs, and activities every year. The main purpose of these courses is to lift the quality of life in resource-rich developing countries, through developing the knowledge, skills and capabilities of key personnel in those nations.

As reported in the "IM4DC Highlights 2013[1]", by the end of June 2013, IM4DC had delivered short courses, workshops and study tours for over 900 participants from 36 developing nations, providing training support across mining-related industries in Africa, Asia and Latin America.

Initial feedback from alumni of these courses and initiatives has suggested positive outcomes from engagement in IM4DC activities, and the demand for IM4DC programs is continuously increasing. However, IM4DC was also keen to undertake a more systematic evaluation of its programs, so as to generate concrete, first-hand knowledge about the impact its programs have achieved in terms of improving the practices, policies and culture of the targeted developing nations.

To meet this aim, IM4DC has partnered with the ALL@UWA, to collect qualitative data by conducting in-depth, semi-structured interviews with alumni from various countries. The information generated through the interviews is intended to provide rich data for IM4DC to review the impact of their past programs, understand the extent to which intended outcomes have been achieved through these programs, and conduct strategic planning for the future.

1.2 Research methods and processes

We conducted this project through 3 key stages. A roadmap of these stages with associated timeline is illustrated in Figure 1, and more details about each stage are provided below.

[1] Accessible from: http://im4dc.org/wp-content/uploads/2013/05/IM4DC-Highlights-2013.pdf

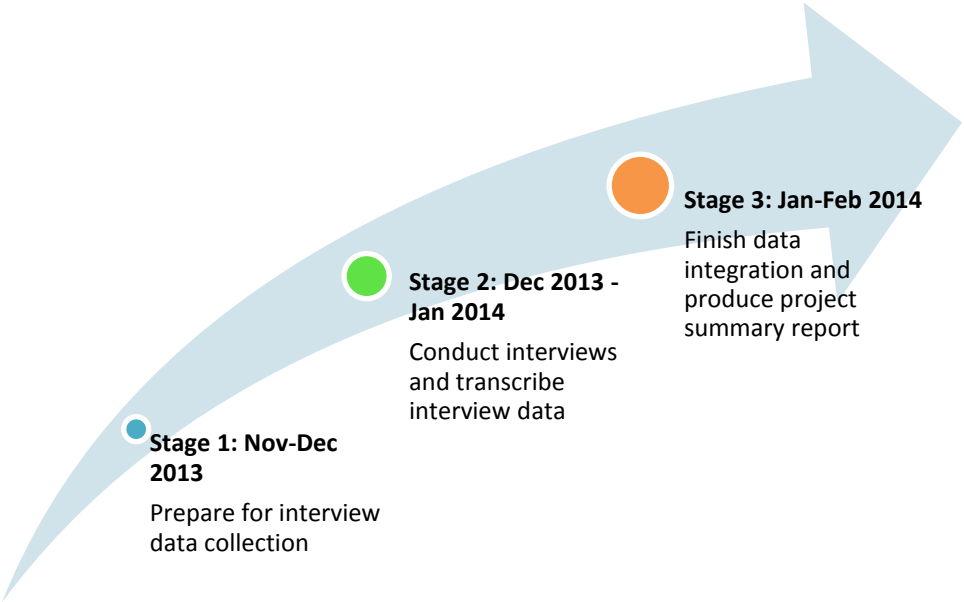

Figure 1: Roadmap of the IM4DC Evaluation of Impact project

1. **Systematically develop interview plans and protocols**, including the following steps:
    a. Conduct a group meeting with IM4DC directors and key staff members to understand the needs and requirements
    b. Develop interview schedules and questions that match the key evaluation questions as specified in the *IM4DC Monitoring and Evaluation Framework*
    c. Revise and finalise interview schedules and questions with IM4DC staff's input, as seen in Appendix A

To design interview questions, the ALL@UWA conducted meetings with IM4DC staff to understand their needs, reviewed the *IM4DC Monitoring and Evaluation Framework* document, and referred to academic literature in areas of training evaluation theories. We drew insight from Kirkpatrick and Kirkpatrick's (2009) training evaluation model, which suggests that training should be evaluated at four levels, with the first level being participants' *reactions* (e.g. perception and feeling about the training), the second level being examining participants' *learning* of knowledge/skills, the third level being the transfer of knowledge and skills into changes in *behaviours*, and the highest level being *results* (e.g. performance or economic). It has been well recognised that both difficulty and time increases as people move up the levels of evaluation.

Based on the understanding of IM4DC needs, ALL@UWA decided to focus the interviews on evaluating the level 3 and 4 outcomes, which concern the actual behavioural changes and the broader impact IM4DC programs have generated for their participants. It was also decided that it was appropriate to focus on work-related changes targeted at the individual, team, or organisational level

that the alumni have initiated and implemented since completing IM4DC programs. Although it was recognised that other types of learning and change might have occurred, such as individuals improving their career prospects, it was felt most important to focus on tangible changes at work, in order to evaluate the extent to which impact was generated in participants' work and their work environment.

2. **Undertake telephone interviews** that are aimed at understanding the achievement of program outcomes

    a. Collate alumni contact list from IM4DC to arrange interviews. A total of 73 alumni were initially contacted via email from IM4DC about the interview, and then followed up with a phone call. 32 of them responded and agreed to participate in the project.
    b. Schedule interview with the 32 alumni. Due to time differences interviews were scheduled to best accommodate alumni's convenience and availability.
    c. Conduct telephone interviews, mostly conducted in the last 2 weeks of December 2013 and a few conducted in January 2014. Interviews were successfully conducted with a total of 25 alumni. All interviews were audio recorded so as to comprehensively retain the data. A total of 6 interviewers were involved in conducting the interviews; all of them were experienced interviewers and trained Industrial/Organisational Psychologists.
    d. Transcribe and summarise interview data, mostly during January 2014. Due to the short time frame of this project, the transcription and initial summarising of the interviews was done by two parallel processes. Firstly, the interviews identified as providing the most complex information were sent to be professionally transcribed. While waiting for the transcriptions, the remaining interviews were initially analysed and summarised by Accelerated Learning Laboratory staff based on the audio file, with the most illustrative quotes being extracted verbatim.

3. **Synthesise and analyse interview findings and produce project report**
    a. Level 1 Analysis: Integrate interview data in accordance with designed interview questions.
    b. Level 2 Analysis: Re-analyse the data to map onto the key evaluation questions as specified in the *IM4DC Monitoring and Evaluation Framework* document.
    c. Summarise and write up report. The report is organised by the key evaluation questions, with answers corresponding to each question and cases, stories, and participants' quotes provided as evidence.

1.3 Summary of Participants

Among the 25 alumni that successfully completed the interviews, 17 were male and 8 were female. The interviewed alumni are from a range of countries as shown in Figure 2. As it can be seen, majority of the participants were from Ghana, Indonesia and Zambia.

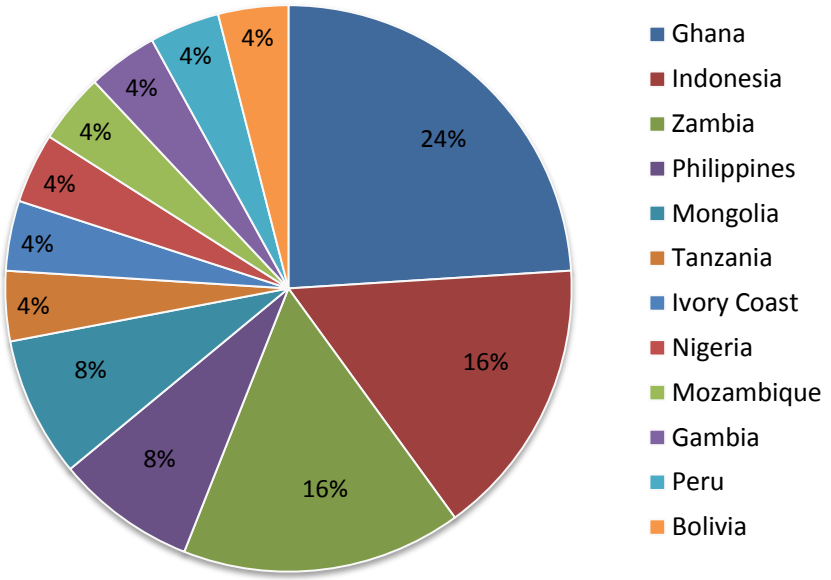

Figure 2: Percentage of participants from each country

Alumni were also from a range of organisations, which can be broadly categorised as universities (N=10), government organisations (N=9) and non-governmental organisations (NGOs) (N=6).

2. Finding PART I. How successfully has IM4DC achieved its outcomes

2.1 The instigation of transformation change

Original question in the IM4DC Monitoring and Evaluation Framework:

To what extent have our participants instigated transformation change because of things they have learnt throughout the program?

We addressed this question in a two-stage process. In the first stage, we attempted to summarise the changes that the participants reported and provide systematic account of the initiatives that they introduced as a result of participation in IM4DC programs. In order to do this, we classified the changes that were targeted at three levels: individual, team and organisational; within each level, we discussed the types of changes that were identified.

In the second stage, we tried to focus more on the "transformational change" that is of particular interest to the IM4DC. At this stage we consulted the existing literature to understand the characteristics that separate transformational change from other types of organisational change and reanalysed the initial data based on these characteristics to be able to formulate conclusions.

We start by providing a comprehensive account of the changes that were reported by the interviewees.

The three levels that we used to classify changes were:

1. **Individual level changes**, which are local changes that alumni have engaged in for themselves. For example, making changes in terms of how they carry out their work.
2. **Team level changes** include changes intended to affect the groups or teams which the alumni work in. For example, making changes about how their team functions.
3. **Organisational level changes** include more strategic changes intended to change the organisation as a whole. For example, implementing new policies or changing the educational courses within their organisations.

We counted the frequency of changes at each of the three levels. All participants had reported at least initiating one change as a result of engagement in IM4DC activities during their interview. However, some participants had reported up to three changes. As shown in Figure 3, there tend to be more changes at the individual level, followed by organisational level. This could potentially mean that the IM4DC programs have

prompted alumni to focus on firstly individual changes, before moving onto higher level changes. However, these changes are not all necessarily separate, individual changes could have had an impact on team level or organisational changes

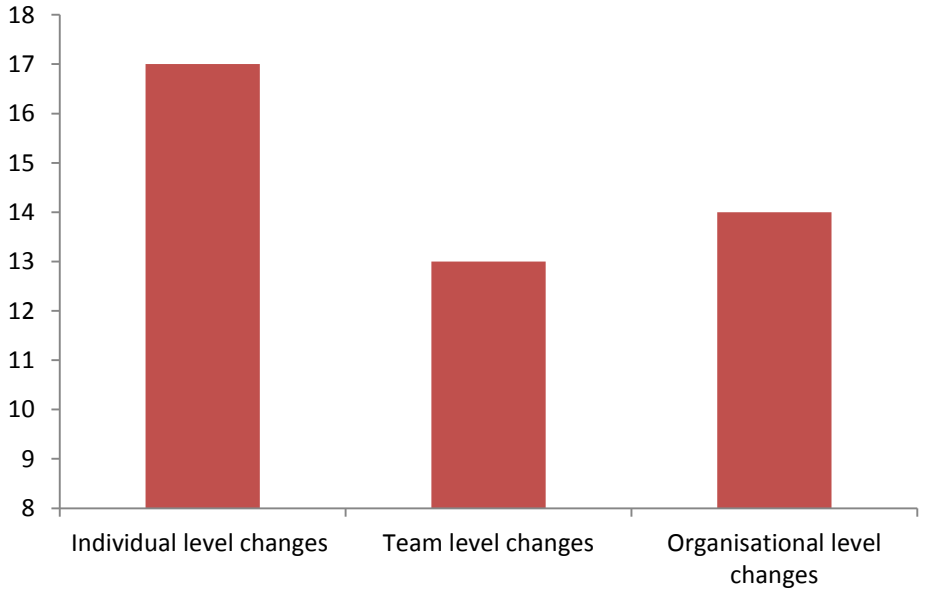

Figure 3: Frequency of changes at each level

Below we provide more details about the actual change activities that IM4DC alumni reported that they initiated and implemented at their workplace. We organise these activities into the three levels of change: individual, team, and organisational.

1. Individual Changes.

- *Changes in the way of thinking and knowledge* were reported by some of the alumni. A number of alumni had stated that IM4DC courses opened up their eyes to new ways of carrying out work, including changing the way in which they perceived their work and the issues within their country. For instance, some alumni stated:

> *'I have had a change of mindset. Before I used to be fixed in my way of thinking, now I try to improve myself and teach colleagues what we have learnt'*
>
> *'I am more self-conscious and self-aware of these mining issues now'*
>
> *'Previously, before I participated in the program, it was all about criticising the companies for failing to do one thing or the other, criticising everybody who was involved……but now with the eye-opener that I got from [the IM4DC activity], I am a lot more*

pragmatic in my analysis of the relationship between mining and development'

'I have changed my attitude [towards safety]; I pay more attention on proactive, preventive measures, than removal of accident'

- *Increased interest in mining research* was also mentioned by some academic alumni, as they had learned about topics they wanted to further explore. Because of the IM4DC programs, they intended to focus their research in specific areas. For example one alumnus has now geared his research towards more sustainable mine closure in his country, as this is what he got out of the IM4DC courses he attended. Other alumni spoke about pairing up with other researchers. A good example of this was a researcher pairing up with an academic from University of Queensland, and another researcher in Indonesia, to write a proposal and carry out research into the indicators of successful mining.

- *Changes in how the individual conducts their individual work* was the third category of individual change mentioned by alumni. Some alumni spoke about having more responsibility in their everyday job as a result of attending IM4DC training programs and intending to make changes. One alumnus stated that since he had run training sessions to educate his colleagues, he received new responsibilities in his work.

'Because of this change, I was able to lead a team' and as a result he got 'More responsibility and more trust'

'I used to work alone, however I have come to realise problems can be solved by working with other people'

2. Team Level Changes.

- *Organising workshops/training/presentations* to transfer knowledge to colleagues and stakeholders was the most common team level change described by the IM4DC alumni. The training/workshops ranged from providing simple presentations to their colleagues about what they had learnt at IM4DC activities, to running discussions within the team to help incorporate some of this information into their work.

'Well I think that what I did after I'm coming was I had a small workshop for my group in my section, those who are into mining and environment and … just to let them know what I learnt. And they're learning new skills'

'Like we had the workshop, just in our school, not involving out-siders but in our school. We had that course, which I was able to

present, like a presentation with others who come and hear what you are talking about'

- *Increase in team working*. Some alumni spoke about enhancing team working by getting everyone together to build capacity and to report on mining issues. One participant in particular spoke about teaming up with organisations that had similar interest in the changes that they were proposing. In particular, teaming up with organisations who were proposing similar revision to the mining code, in the hope that together they can push the government to put it forward.

> *'So the government need to revise their mining code but we are not able to do it `directly but we can indirectly with other organisations who have funding and can push government to review the mining code to make it more development oriented than what we have currently'*

3. Changes targeting the Organisation and beyond.

- *Influencing and engaging internal/external stakeholders was* one of the key changes that were described by the participants. This change was significant as many participants believed that stakeholders were vital to successful implementation of their recommendations. For example, some alumni attempted to influence university management to reinforce mining-related changes.

> *'We feel that some of the stakeholders do not really have a very good grasp of what the responsible mining will do…….. The outcome that we achieved in that particular campaign was that we helped open the minds of the stakeholders'*

Another alumnus spoke about changing the policy to enhance engagement with mining companies as a result of IM4DC training. The participant summarised as follows:

> *'What was happening was the mining companies felt that we were always attacking them; we were always criticising them; so they also did not find it prudent to engage us in any way and, as a result of that, it was the communities who suffered. We have moved away from confrontational advocacy … moved away from adversarial advocacy and now we are seeing a lot more of engagement. We are getting a lot more of dialogue, like the mining companies, government and the regulatory agencies'*

- *Developing a mining-related centre/facility* concerning responsible mining was another common change that had come up in the interviews. One good example was the establishment of a new civil society organisation, created by one of the participants who attended the IM4DC program. The organisation was established with several partnerships, such as Columbia University, so that people can work on

publishing documents, organising public lectures, conducting press releases and providing recommendations to the government. The participant stated that:

> *'This [new] organisation is where we dedicate our time doing research and advocacy focused on mining sector'*

- *Modification/Development of course syllable/curriculum* was common for academic alumni working within the university. Coming back from the IM4DC training, a lot of these alumni incorporated materials and knowledge they learned from the IM4DC programs into their existing courses/curriculum. A good example of this was a participant who incorporated knowledge and information learnt in the IM4DC program to develop a program in petroleum mining and engineering within the university. Another participant talked about getting the idea to revise current curriculum after learning about new topics within the IM4DC training programs. He stated:

> *'After the course, I realised these topics are important and they need to be included in the curriculum, I realised that the environment needs taken care of'. As a result of this change, the alumni stated that 'People are now able to know what to look for at the accident scene and how to write it up'*

- *Providing new services as an organisation.* One participant explained that they provided training to business and local industry, with their team. He had realised that local business '*lacked the skills and ability'* to understand the dynamics of extraction, and the capacity of the oil and gas industry. Therefore, he put together a team and delivered training and workshops for local business, for a number of reasons.

> *'Some businesses don't know how to access emails and, for those who do, sometimes you go on the website of some metal industry company to get some vital information and it's not available. So I really need to focus on … to really support them, to help them move along. Some … the very, very small, local businesses really look up to … the business education, the business development of the metal association to propel them with information. They really need some support in accessing information, in building their capacity, in understanding the industry in the first place'*

Mapping onto "Transformational Change".

In this second stage, we consulted the existing scientific literature on transformational change in order to better map how the changes we described above can be considered transformational. We found the literature on this subject to be very diverse and poorly integrated (Chapman, 2002) transcending multiple levels from individual to societal. For the purpose of this report, we chose to focus the mapping process at the organisational

level. We considered this level to be the most appropriate as it is within the reach of participant's actions and can be an indicator for the broader social impact that IM4DC is targeting.

Existing literature seems to converge around the idea that at the organisational level, transformational change can be equated to gamma changes (as described by Golembiewski, 1979) or second-order changes (as described by Watzlawick et al., 1974). This means that transformational changes are those changes that alter the existing culture of a system and the way that the purpose of a system is understood. It usually means a shift in the deep structures of a system: a reframing of attitudes, beliefs and cultural values that generates a shift in the overall processes and strategy (Chapman, 2002).

Having this conceptualisation in mind, we reanalysed the changes that the participants described and found out that none of them fully comply with the definition of organisational transformational change, and many still revolve around traditional (alpha/beta or first order) changes. In other words, most of the changes that are initiated by the alumni are targeted at things that can be changed within the existing system boundaries: an extension of what is already done (e.g., adding mining as a research focus) or at most changing the standards of work (e.g., changing the inspection process or the qualification requirements). Transformation change at this level would need to challenge existent boundaries of systems in order to produce profound, fundamental and durable shifts. Nevertheless, taking into consideration some of the characteristics that are considered to differentiate transformational change from traditional change (Chapman, 2002), we believe that some initial steps have been taken to facilitate transformational change in the future. We summarise our observations against the three characteristics of transformational change proposed by Chapman (2002):

a. *Transformational change is holistic (Nature and scope of organisations and the purpose of change):* transformational changes concern changes in the multiple overlapping and interconnected elements of organisational systems, rather than single, standalone units. Therefore, every level should be a target of change – from the individuals within every unit to the different units and organisations that compose a wider system. In this sense, IM4DC activities are partially aligned with the nature of transformational change in so far as it appears to facilitate change in individuals and to successfully bring together individuals from different but interconnected structures. In order to move towards transformation change, IM4DC should seek to facilitate the coordination of all change initiatives within different subsystems and the creation of interlinks between individual organisations, their business partners and the broader society for a wider impact.

b. *Change process (or Change strategy).* At this level, there are two characteristics that separate transformational change from more traditional ones. The first one

consists in primary change targets: Traditional changes usually have formal structures and systems, or existing processes or relations as primary targets. By contrast, primary change levels in transformational change are attitudes, beliefs and values. Here we could observe an initial step as many of the alumni reported changes in attitudes or values as one important outcome of the program, giving us reasons to believe that transformation changes do happen at the individual level but they are not translated into transformations at the organisational level yet (as indicated by the type of changes initiated at higher levels). The second characteristic of the process relies in the fact that stakeholders are involved in the change process and participate fully to it. Another encouraging sign at this level is an increased involvement of stakeholders that was reported by some of the participants. But overall, the changes that people have initiated in their workplace are still first–order changes, e.g., targeting at developing other people and improving existing structures through training and improved products/processes. To make change more transformational, IM4DC should consider ways in which participants could transfer the changes in attitudes, beliefs and values that they personally experience into the organisational level. Sometimes such transfer is difficult with only a restricted number of change agents, thus active consideration should be given to ensuring a critical mass of change agents who would facilitate organisation/societal wide transformational change.

c. *Change agents role:* What separates transformational change from traditional changes with respect to change agent roles is the fact that all members of the organisation can act as change agents, not only people at the top. IM4DC practices reflect this strategy by inviting people at all levels of organisations to participate in their educational programs. However, transformational change still requires people from the top of hierarchies to enable and support change and provide visionary leadership, even if these people do not act as frontline drivers of change. IM4DC could more actively consider how to facilitate this kind of support from leaders at the top of the organisational hierarchy that is needed in transformational change.

2.2 Barriers to changes

Original question in the IM4DC Monitoring and Evaluation Framework:

What were the barriers to achieving these changes?

A number of barriers were identified by the alumni when they were trying to implement the changes they initiated. Our analysis suggests a number of key barriers and the

frequency of them is reported in Figure 4. Not all alumni had reported barriers, while some had reported up to two barriers.

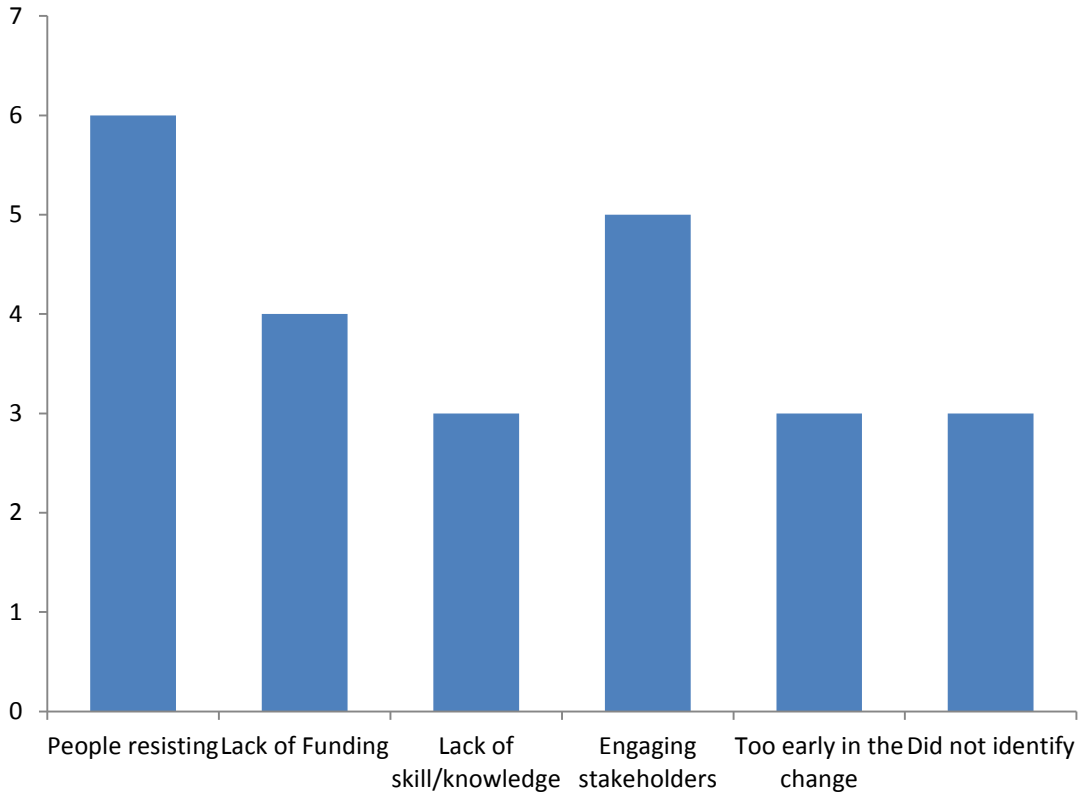

Figure 4: Frequency of barriers that alumni encountered in implementing change

Different Types of Barriers.

- *People resisting/ not accepting change* was a common theme mentioned by alumni. Some of them spoke about people being "anti-mining" in their countries, making it hard to implement changes in the way they intended to. In other cases alumni have tried to stop illegal mining, but have faced strong resistance. For example, one alumnus stated:

  'They still come back into the area and then dig up what we have backfilled. There are educational programs on TV…it tells people about the effects of illegal mining. So until the communities are able to understand that illegal mining is not the best way to go, we will not be able to implement that area.'

Other alumni spoke about the resistance/ lack of acceptance from the community/team members. For example:

'The second obstacle would have to do with the community perceptions of our organisation. There is this perception that once

you sit down and talk with the mining company, the mining company has bought you over. But we have to explain to them that no, we cannot be bought over by any mining company. We still remain a distinct civil society organisation while the mining companies remain profit entities'

- *Lack of appropriate funding* was another common theme that had emerged among alumni. Several of them spoke about how their organisations did not have the money to implement changes they intended to bring about, and it was hard to get others on board to provide financial support. One participant stated:

  'First two areas that we worked on, they worked without asking any money. But for the rest of the areas they asked that the Agency pays the people going in the field to collect all geographic data needed to do the maps. And the Agency could not do that. So the project was stopped there'

- Others had stated that there was a *lack of others' skill/knowledge* from people who have not attended the IM4DC courses. Some changes the alumni proposed involved the whole organisation, and this was hard to implement if people did not understand why changes were necessary. One participant stated that:

  'The recommendation that I suggested involved the whole department….and so it was not easy to try and get everyone to understand'

  It was clear that participants would benefit from specific and targeted development in organisational change management knowledge and skills, to enable them to understand the complexity in change and effectively engage others into change initiatives.

- *Engaging stakeholders* was another common obstacle described by the alumni. To carry out the change they had wanted, various amount of people needed to be involved. For example one alumnus spoke about how hard it was to get everyone to come to one place and confirm a team. The constant messaging, meetings, handing out forms had been a barrier in getting a team organised.

- Some mentioned that they *had not yet encountered obstacles*, mainly because they were not that far along with their changes/recommendations.

- Three alumni *did not identify any barriers.*

2.3 Ways to overcome the barriers

Original question in the IM4DC Monitoring and Evaluation Framework:

What was done to overcome the barriers?

Despite a lot of participants not stating how they had overcome their barriers, a few participants mentioned a couple ways they tried to get around the barriers. For example:

- One individual decided to *invite government and policy makers* to a 'Round Table Discussion' and provide a neutral discussion on mining, without intending to convince them of anything, so that an open conversation can be held. The individual stated:

  > *'I invited some of them to the 'Round Table Discussion' this is something neutral, this is not trying to convince you to be pro mining, but I just wanted them to be there, to have a perspective about what the mining industry is doing, what the government is doing and what others can do in order to help the industry. ……..Some have changed their stand; others are still thinking about it.'*

- Other individuals stated that they used their *networks* to remain on track. One particular participant stated that one way to get others on board to provide financial support is by using their network. The participant mentioned that although they need other organisations, other organisations also need them. Therefore, exchanging resources and skills with other organisation was a good way of getting around the financial problems. However, the participant made it clear that this was just a short-term fix to their problem, and that they lacked a major source of funding for much bigger projects.

- Others were *proactive and optimistic* about what they wanted to do, and that *attitude* had helped them to persist regardless of barriers. One participant in particular stated:

  > *'I still believe that there are some people who you know will support me and there also some people who will be against me, but I am going to pursue it and present it, because I know and believe'*

- Another individual stated that to get over the negative perceptions and the resistance, they explained to their colleagues and other stakeholders how it was *done in other successful countries* like Australia.

2.4 The development of leaders

Original question in the IM4DC Monitoring and Evaluation Framework:

To what extent has IM4DC developed leaders for mining development?

In order to examine whether IM4DC has developed "leaders for mining", we began by looking into existing academic literature that explores management and leadership. It has been argued that while management and leadership are not the same (Kotter, 1990), they also tend to go hand in hand and complement each other. In our analysis, we selected a recently developed framework that was based on systematic integration of previous management and leadership models (Dierdorff, Robin, & Morgeson, 2009). We selected this model because it is a comprehensive coverage of all the role requirements and competencies of effective managers and leaders, and because it maps well onto other related leadership models such as those developed by Conway (1999), Kolk (2004), Scullen, Mount & Judge (2003), among others. This model posits three competency categories: conceptual, interpersonal and technical/administrative. The conceptual dimension refers to competencies such as strategic thinking, generating new ideas, making decisions; the interpersonal dimension concerns competencies such as interacting, influencing and leading others; and the technical/administrative dimension includes areas of managerial work dealing with traditional functions and businesses (please refer to Figure 5).

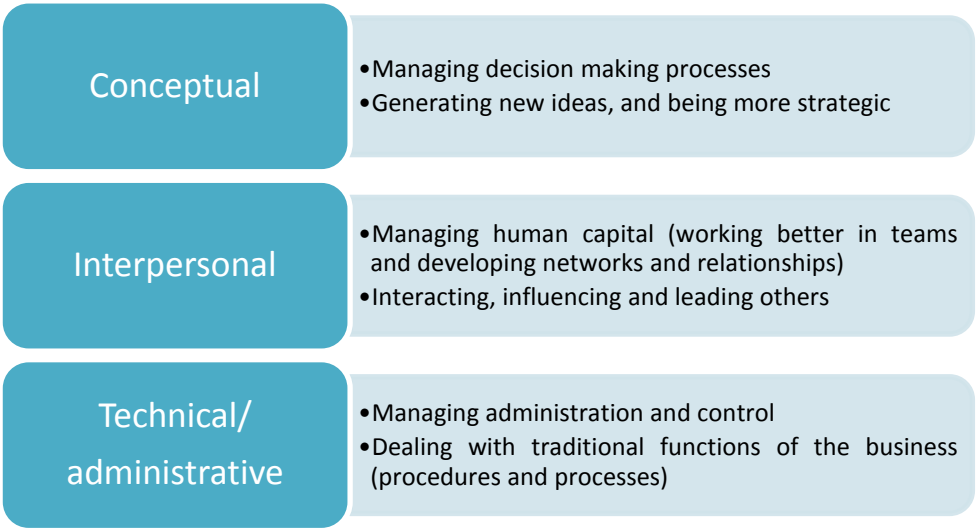

Figure 5. The three leadership dimensions (Adapted from Dierdorff et al., 2009)

Having this framework in mind, we re-analysed the interview data to see how the changes reported by alumni can be mapped into these leadership dimensions. Although we did not directly assess alumni's change on these competencies before and after the

program, it is hoped that behaviours as demonstrated in people's reports of change-related activities could still be reflective of their development and change.

We coded the alumni's reported behaviours into the three categories. For instance, behaviours such as making an influence on key stakeholders or organising meetings for the team were coded as interpersonal; behaviours such as changing course curriculum was coded as technical/administrative; creating new centres/institutions was coded as conceptual because of their strategic focus. After coding the data into these three dimensions, we counted the frequency of each dimension that alumni had demonstrated in their change initiatives and the results are reported in Figure 6.

As it can be seen, most alumni demonstrated leadership competency in the interpersonal dimension. This suggests that the IM4DC programs have provided a sound platform for participants to interact, network and build relationships, and have thus contributed to their interpersonal capability development. There is also a reasonable level of competencies demonstrated by alumni in terms of conceptual and technical/administrative competencies. A number of people had demonstrated behaviours on two competency dimensions (N=12) and one alumnus had demonstrated all three competencies. Only 3 alumni had no clear demonstration of competency in any of the three competencies.

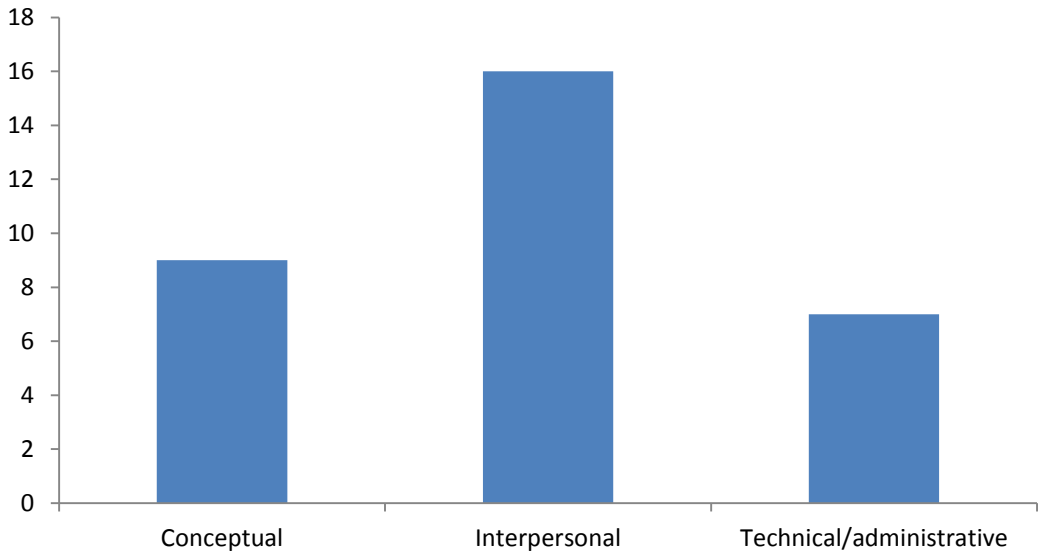

Figure 6. Frequency of individuals reporting the specific leadership competency

The analysis of these results suggests that the IM4DC programs have enabled the development of leaders in mining or are in the progress of doing so, with particular evidence found in terms of the interpersonal aspect of leadership competency such as building networks and improving collaboration. However, there is less strong evidence

of the development of conceptual competency (e.g. high-level strategic thinking and planning, creating and implementing new ideas), which is perhaps the most important area for alumni to development in order for more ground-breaking transformational change to happen at the social and cultural level in the long run. IM4DC could consider place more emphasis on this area to purposefully develop participants' conceptual competencies.

It should be noted that our analysis is based on alumni's self-report and is inferred from the change stories people have provided, thus we could not draw firm conclusion that the data reported here equate the alumni's actual leadership effectiveness. A more rigorous analysis of leadership development over time is to collect data from participants' supervisors and colleagues (e.g. using a 360-degree assessment process) prior to and after participants' attendance of IM4DC programs. This would offer more objective and comprehensive insight about alumni's development through participating IM4DC programs.

2.5 Innovation in mining for development

Original question in the IM4DC Monitoring and Evaluation Framework:

To what extent has IM4DC contributed to innovation in mining for development?

We started by clarifying what innovation means in this context. As the literature on innovation is complex and scarcely integrated (Crossan & Apaydin, 2010), we chose to look specifically at organisational innovation as this is the level where we expect certain innovation to occur based on the characteristics of IM4DC alumni and given the time passed since their participation in IM4DC programs.

Based on the existing theoretical reviews on this topic, we adopted the following definition of innovation: "*the intentional introduction and application within a role, group or organization of ideas, processes, products or procedures, new to the relevant unit of adoption, designed to significantly benefit the individual, the group, the organization or wider society*" (West & Farr, 1990 p. 9 apud Anderson et al., 2004). In essence, innovation involves the implementation of something 'novel' that is also useful.

Having this definition in mind, we reanalysed the answers the participants offered to the two interview questions regarding change and outcomes to see how many of them describe changes or actions that fit this definition of innovation. Based on the key elements of this definition - innovation means not only the creation of something new, but also adoption of something new and relevant to the specific interested unit - we found that most of the changes described by the participants could fit this definition and could be considered instances of innovation. As a result, a total frequency of 35

instances of innovation of different degrees has been identified, with just 2 interviewees not reporting any change that could be classified as innovation based on the adopted definition.

Based on the same definition and other similar or extended definitions (Crossan & Apaydin, 2010), some characteristics of innovation which can be of interest for this particular context were identified in order to deeper analyse these instances of innovation.

- The first characteristic we considered of interest was whether the innovation consisted in the **production** of new ideas or **applications** of existing new ideas or products. All innovation instances (N=35) were found to represent cases of applications of new ideas/knowledge or technology to the context of the particular country where the participants came from. Also, as some changes at the individual level do not meet the criteria described in the definition, most of the innovations take effect at the organisational level (N=17) but the team level (N=9) and the individual level (N=9) were also represented in the examples discussed.

- Another characteristic that was of interest for us was to look at the stage of the innovation process, and we tried to distinguish between innovations at the stage of **adoption** (discussing/deciding to adopt something new) or at the stage of **implementation** (the specific innovation is already introduced into the organisation in a certain degree). Analysing all the instances of innovation, we found out that almost all of them were in the implementation stage. Only one case of innovation at the adoption stage was discussed by one of the participants. This is encouraging as it suggests that organizational systems back in the countries are open to introducing new ideas and changes, at least in some cases, and that not too much time is lost in the adoption or decision making process.

- A third characteristic we were interested in was to look at what specifically is introduced in these countries as a result of participating in IM4DC programs. We analysed data and looked at the nature of the innovation and made distinctions between **process** (i.e. an innovation regarding the way things are done at that specific level), and **products** (i.e. an innovation in the things that are done at a specific level). Our data reveals a good balance between innovations in process (N=17) versus products (N=18). These data have been analysed together with one last distinction regarding the nature of the innovation as **technical** (impacted the core activity of the organisation/ workgroup/ role) or **administrative** (impacted the peripheral organisational systems). The majority of these innovations were technical (N=29) with only N=6 being at the administrative level.

Going beyond this quantitative picture of the innovations, we took a closer look at what it is usually adopted in participants' organisations. Therefore, we tried to look at those types of innovations that are reported most frequently. For example, all of the administrative innovations were at the organizational level and were targeting the process, and what is transferred in these countries seems to be the Australian model of dialogue and collaboration between institutions and stakeholders.

Still at the organisational level, there were significant innovations mentioned al the level of products. Two trends were identified. The first consisted in the incorporation of knowledge and models disseminated by IM4DC into new and improved organisational products in terms of curriculum or programs (technical). The other trend consists in the adoption of entirely new working structures such as Centres and Institutes:

> *'General outcome was the establishment of a new civil society organization created by me and another young colleague, where we dedicate our time doing research and advocacy focused on mining sector'.* [This civil society has been explained before in the organisational changes – please refer to section 2.1]

At the individual level we could identify another common trend: most of the participants who reported innovation at this level reported the adoption of more research-oriented work. So it seems that what it is adopted in the participant countries is a model of scientist-practitioner that has been inspired by the heavy accent the IM4DC programs have on research:

> *'Our research now also is more geared towards more sustainable mine closure in our mining environment'*

At the work group level the trend evidenced by our data shows that the actions of participants are targeted at the dissemination of new knowledge and work methods among the existent colleagues in an attempt to improve work practices and process:

> *'Well I think that what I did after I'm coming was I had a small workshop for my group in my section, those who are into mining and environment and … just to let them know what I learnt. And they're learning new skills…In fact, I even recommended one of my staff to attend a workshop and for this year, last month, actually'*

Overall, we conclude that the participation in IM4DC programs contributed to innovation at the organisational level in the area of mining in development countries. We have seen that new ideas and models are successfully implemented in the home countries depending on the existing needs and the process the people undergo to apply these ideas or models is not reported as being particularly difficult. The organisations in developing countries seem to be permeable to new models and ideas and IM4DC should further investigate new ways for facilitating transfer of innovation into these countries and supporting existing innovations to reach outside the organisational boundaries.

2.6 Contribution to governance and accountability

Original question in the IM4DC Monitoring and Evaluation Framework:

What evidence is there that IM4DC has contributed to improved governance and accountability through effective ad transparent regulation and management in extractive industries?

For answering the question regarding the IM4DC contribution to governance and accountability in participant countries we relied on two sets of questions. First, we used the demographic questions regarding the participants' job and responsibilities to determine if participants are in a position where they could influence governance and accountability. Then, we analysed the type of outcomes or changes these individuals reported as a result of participation in IM4DC courses. We sought to identify the cases in which these changes translated in better governance or capacity for governance. In these step we also reanalysed the changes and outcomes mentioned by people coming from other backgrounds than governance to identify if the changes they report have implications for governance in their respective country.

Our data analysis revealed that out of the total of 25 interviews that were conducted, almost a half of the participants (N=11) were representing governance bodies in their own country and implemented changes in their respective work places. Moreover, some of the other participants (N=3) who came from different backgrounds (like academia or NGOs) also reported implementing changes that impacted upon aspects of governance and accountability. We will shortly describe the main trends in these data regarding improved governance.

The most common trend found in data reported by participants working in governance related to an improved capacity of working and quality of work and services provided by the institution they represented. The majority of participants reported not only an improved quality of work from their part, but also reported undertaking trainings within their institutions in order to help their colleagues also incorporate new skills and procedures into their work. Depending on the particular role of the participant, these improvements can be incorporated into strategic planning, as it was the case with one interviewee that was involved in national development planning. This is a case that highlights how IM4DC training could have a multiplying effect at a macro-level, so more consideration should be given to attracting participants from key strategic positions to take part in IM4DC activities.

> *'So I then began to see, "Well why don't we then change strategies for….[failed to be captured]?" So when I came back I decided, "Oh look, let's go talking to the mining companies" and that was all they need, and so far the response has been quite phenomenal'*

Besides increased quality of work, developing new tools to assist in the work of the institution has also been reported, examples including new data bases and geographical information systems that assist in the certification and inspection process.

> *'After the training, as I was telling you already, we are responsible to put up a national system for environmental information….. So I worked together with this committee [National Committee of Tele-Detection and Geographic Information]. And this committee has already produced a first report which presents the industrial areas in Ivory Coast and the companies that are up to date with all the environmental regulations. In more detail, the companies that were object to environmental and social pacts, and the companies that were object to environmental audits. And we end up knowing which companies made this audit and which companies remain, not having done yet their studies and not being to date with the environmental regulations'*

Some of these participants reported having successfully contributed to policy or regulation changes. One example that was discussed was influencing policy and regulation change regarding the qualifications needed for mine inspectors. This could dramatically improve the quality of mine inspections in the future.

Besides policy, a few of the participants working in the governance sector reported they have initiated or plan to initiate changes in the form of creating new structures or institutions. These new structures could also contribute to an increased governance capability in the future.

Last but not least, all the participants working outside public bodies that reported changes with implications for policy and governance referred to ways of changing or initiated new ways of interaction and dialogue with government bodies in an attempt to improve collaboration and understanding. We believe these initiatives are also a necessary step forward for an improved governance and accountability in participant countries.

2.7 Contribution to social, economic and environmental outcomes

Original question in the IM4DC Monitoring and Evaluation Framework:

What evidence is there that the IM4DC has contributed to strengthened economic, social and environmental outcomes from mining in developing countries through education and training?

What evidence is there that IM4DC has contributed to implementation of policies and process in partner countries that ensure that resources

development results in substantial, inclusive and sustainable socio-economic development?

This question is very difficult to answer as: 1. A short period of time has passed since the interviewees participation to IM4DC actions; 2. Economic, social and environmental outcomes of the changes they have introduced are rarely specifically named by our participants; and 3. It is very difficult for our interviewees to draw a straight line between outcomes of the changes they have initiated, when they can be identified and their participation to IM4DC programs as many processes contribute to those outcomes.

Analysing all the interviews reveals that most often people report outcomes of the changes that they have introduced at the individual level (e.g.: more responsibility and more work to do). There was only one case in which a participant mentioned an outcome at a more macro-level when discussing the significant decrease in accident rates that he associated with the trainings he organised after his participation in IM4DC programs. The alumnus in this case had introduced a new training to small scale mining, to try and prevent, instead of cover up accidents. This attitude change was a result of the IM4DC activity he attended. As a result of this new training, the accidents had reduces by half, with 10 accidents only being reported in one year as opposed to 20 in previous years.

Other such outcomes are not specifically mentioned but can be implied from the nature of the changes and outcomes discussed so far. We have seen that several of the changes introduced by IM4DC alumni facilitated better inspections of mines, both in the environmental area by introducing new technologies and tools and in the safety area, by improving inspection protocols and inspection quality. We expect these improved procedures to result in long-term outcomes in social, environmental and ultimately economic areas. Furthermore, we have seen that some of the actions initiated by IM4DC alumni are directed toward a better dialogue between main stakeholders. This is a necessary condition for facilitating growth in all areas.

> *'After I had been through the course I got to know the need to engage the companies in addressing community problems'*

Overall, we can conclude that the macro-level outcomes of participation in IM4DC activities are not yet easily visible, especially in the relatively short term, but the changes that are reported by IM4DC alumni have already started to create conditions for such outcomes to be facilitated. Basically, the outcomes targeted by IM4DC at the macro-level cannot be obtained without earlier changes occurring at individual, work-group and organisational level and what this data is indicating is that such earlier changes do occur. It is then a matter of consolidation of these changes over time and achieving a critical mass able to generate outcomes visible at a more macro-level.

3. FINDINGS PART II. TO WHAT EXTENT DOES IM4DC MODEL IMPROVE OUTCOMES BY FACILITATING COLLABORATION BETWEEN STAKEHOLDERS

3.1 Network, partnerships and communication

Original question in the IM4DC Monitoring and Evaluation Framework:

To what extent have networks, partnerships and communication resulted in positive outcomes?

There were a number of different types of networks being formed by alumni since attending the IM4DC program. However, in the interviews, most people only described these networks, rather than talking about the outcomes from these interactions. Figure 7 shows the frequency of various types of networks that IM4DC alumni described. Not all alumni reported networking, however some reported up to two network types.

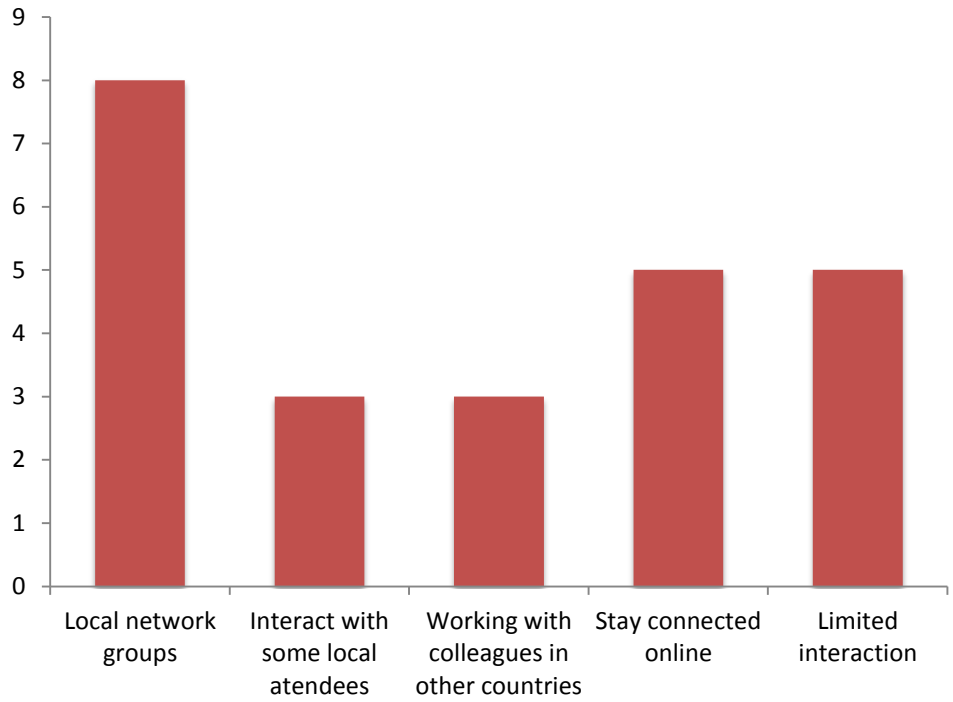

Figure 7: Frequency of various types of networks described by alumni

Networking.

- Multiple people spoke about *forming alumni networks within their country*, where they could meet up and discuss what they had learnt in the IM4DC programs and share their current experiences.

  'There is a network that I am constantly in contact within the University of Philippines. After attending program, we made a network with not only University of Philippines but also other universities in other regions of Philippines'

  'We formed a Zambia Australia Alumni Association, with all the people from Zambia trained by IM4DC'

- A couple of individuals stated that they were still in *contact with people from their country*, who had attended IM4DC, and kept in touch with them through emails and phone calls.

  'Most of our interaction has not necessarily been directly related to the work. Some has been general, some has been just learning about what each other is doing. ..... Sometimes yes I do rely on them for information here and there when I need to'

  'Mainly we talk about things like, for example, yes, another person involved with agriculture and I'm involved with mining. We have vested interests, for example, on land where one would say, "Oh, but when you open up a mine here, it means that the land that was supposed to be earmarked for agriculture will not be used in that area". ...- try to find a common ground'

- Three alumni *collaborated with academics from Australia* after attending IM4DC programs, to work together on research projects. As mentioned before, one of the participants reported writing a research proposal together with researchers from University of Queensland, and Indonesia.

- *Stay connected online* with some of the alumni who attended the IM4DC programs, via email and Facebook. Others have stated that they have created 'whatsapp' groups to keep in contact when they have challenges that arise.

- Nevertheless multiple people stated that they had *limited interaction*, especially out of their country.

  'Did not have much interactions (with alumni) - tried 3 of 4 times to send emails, and they hardly respond. Locally, however we are meeting a lot, with the interest group'

Overall, data provided by the participants in this study reflect a limited use of the networks and communities of practice that IM4DC is actively encouraging. This limited use is due to two main tendencies highlighted by the data we analysed. The first one related to difficulties in transgressing country boundaries, as alumni seem to be more actively engaged in national networks compared with international ones. The second tendency is reflected in the nature/content of information shared within these networks. Participants often report using the networks for sharing past experience and maintaining interpersonal relationships and less as resources for improving their work. Therefore, IM4DC should investigate ways in which these networks could overcome country barriers but how they can be developed into strong resources for work-related issues in the future.

3.2 Experience involving in IM4DC program

Original question in the IM4DC Monitoring and Evaluation Framework:

What experience, positive and negative, have our stakeholders had in their involvement with our program?

All alumni participants reported positive experience with their involvement in the programs. This experience varied from learning new knowledge, to observing practically "what was best".

- *Information was useful and relevant* (N=9). This was the most mentioned experience that alumni had gotten out of attending the IM4DC activities. Many alumni spoke about the information presented at the IM4DC activities being directly related to what was going on in their country, while others spoke how they could see and use this information and skills when they returned home.

> *'I have acquired skills of negotiation. It's a simulation exercise we did in (one of the programs) ....she gave us a scenario and then we acted it out, so it's something I really enjoyed and I'm still using it to my advantage'*
>
> *'It was really enriching because it had ... it helped me to have a broader view about how to develop these research lines here'*

- *Observing good practice* (N=5) was another common experience mentioned by alumni. Field trips and visits to the mine sites while in Australia. Specifically, one alumnus stated that the highlight of the IM4DC activity was the field trip to the

mines. This was educational and practical as it showcased how committed a mining company can be, and how they can set high standards.

- *Positive interaction* (N=3). Some alumni mentioned that participants in the IM4DC activity were very diverse, and it allowed them to learn a lot from people, as everyone had different experiences.

> *'Some people came from the government; some other people came from the Academy. It was a very good space, you know, to share'*

> *'The participants were very diverse and so I did really learn a lot from everyone; from government officials, to advocacy groups, to industry players themselves.'*

- *Clarification of information* (N=3) was also used to describe the experience of the IM4DC activities. Some stated that they had better clarification and understanding of the work they had been doing in their country, while others stated that the IM4DC programs helped to strengthen the focus of the mining issues within their country, and allowed them to see what could be done to improve these issues.

- *Mindset change* (N=2). Lastly, some alumni reported that after the training they saw things from a different perspective than before attending the activity. One participant stated:

> *'It was an eye opener for me. I'm an engineer by profession so my learning with economics and geography is not that comprehensive so when I attended this course I saw things from a different perspective. Especially in a mining country like Australia. I realised that there's more to mining. It could be developed into something that could not only develop the particular area for the mining operation, but particularly the whole region. '*

FINDING PART III. TO WHAT EXTENT WERE THERE UNEXPECTED OUTCOMES RESULTING FROM IM4DC ACTIVITIES

Original question in the IM4DC Monitoring and Evaluation Framework:

What if any, were the unexpected outcomes of the alumni, from IM4DC activities, including the flow-on effects?

What ere some of the unexpected flow-on effects from IM4DC activities?

Not a lot of alumni mentioned unexpected outcomes. This could have been because they found it difficult to separate the changes that they implemented after the IM4DC program from those that were unexpected. In total, 4 alumni spoke about unexpected outcomes that resulted from the IM4DC activities.

- One alumni spoke about going into the IM4DC program, completing the activities and then going back home and changing the curriculum. He stated that he went into the course not expecting to get this sort of outcome. But he realised after attending that the topics talked about in the IM4DC activity were quite important and needed to be added to the curriculum.

- Another alumnus mentioned that learning from IM4DC programs allowed him to change the approach his company used for community engagement, which was an area he did not expect to change as his initial expectation about attending IM4C programs was purely to learn about utilisation of minerals.

> *'Before I came there, my philosophy was totally different: that there was no need to change the company; but after I had been through the course I got to know the need to engage the companies in addressing community problems'*

- The last unexpected outcome was that one alumnus spoke about being involved with the local authorities, who are in charge of communities and who work with mining companies in the area. This alumnus shared some of the information learned at IM4DC in terms of how to collaborate with mining companies, and approached the local authorities through several departments. He stated that this was an unexpected outcome and he didn't think about it until he went back.

> *'I never thought about it before attending IM4DC and in fact when I was living in Australia I did not say "When I go back to Zambia this is what I'm going to do".*

Overall, it seems that the reported unexpected outcomes of participation in IM4DC activities are limited. But these might be related to the fact that participants placed high expectations for their participation in these programs and had actively considered the implications prior to participation. Also, it might be difficult for participants to distinguish intended outcomes from unintended. Having a more clear definition and taxonomy of the unintended outcomes that IM4DC would like to target would be helpful in more thorough assessment of these aspects in the future.

4. RECOMMENDATIONS TO IM4DC FROM ALUMNI

Several recommendations to improve the value of the activities were provided by the alumni for the IM4DC programs. This summary is based on responses from alumni who offered recommendations. The recommendations are listed, from the most frequently mentioned to the least frequently mentioned.

1. Involve industry/government into IM4DC programs. *This was the* most mentioned recommendation to the program. Involving the government and industry allows people to better carry out changes if all the parties involved are on the same page, understanding the mining issues and knowing what needs to be done. For example, some alumni spoke about the need of policy changes, yet the biggest challenge is that the government of his country does not understand why such policy changes are necessary. One alumnus specifically stated that:

> *'Those coming up with laws and recommendations right now are not really knowledgeable; it is frustrating for those who have been giving sound recommendation. They don't know much about industry and they come up with things that are restraining for the industry'*

This suggests that rather than training individuals separately, it would be of more value if all the key stakeholders in that system are trained at the same time, so that everyone would achieve the same level of understanding and collectively engage in change.

2. Make IM4DC programs longer: A number of alumni mentioned that IM4DC programs are too short; Alumni stated that some training programs that were two-week long were too short for the amount of complex information presented. Alumni suggested to space out the trainings and to give people more space to properly assimilate the content of the program. This would also allow for more time to concentrate on specific topics. Other alumni suggested IM4DC could hand out academic materials in advance so that they have time to read through it before attending the training.

This suggests that it is useful to think of alterative program layouts. For instance, instead of a 4-week intensive learning, a possible design could be having 2 weeks offsite, then allowing participants to go back to work for 6 or 12 months while giving them various activities to keep practicing, and finally having another 2 weeks offsite. Research has show that such design would support better integration of learning (Day, 2012).

3. Focus on small scale mining was mentioned a couple of times. Alumni stated that this was very important because the issue of small scale mining is more relevant for their country than it is for Australia, and they perceived a high training need in that area as that issue has social and environmental

consequences. IM4DC is perceived to focus mainly on bigger mines; more information in the training should be provided about the use of technology for mining rehabilitations, and an overall focus on the small scale mining issues in each country.

4. Support to implement changes was another recommendation mentioned to IM4DC alumni. Alumni stated that they had had good ideas leaving the program, but it was hard to implement them when they got back home. They suggested that IM4DC could help them through the implementation process. Specifically, one alumnus stated:

> *'Could provide some support: it could be financial, it could be human resources support to the organisations so they can implement their Return-to-Work plan. I'm sure that could be much, much more bigger [impact].'*

> *'In most cases, some of the organisations which are small, like mine, because we are very small and our funding base is very, very narrow, we are not able to completely conduct the Return-to-Work plan and that is so bad because if we get some small support, something very minimal, I'm sure we could implement the Return-to-Work plan.'*

5. Contact industry and help create networks with them was also suggested. Alumni often had good intentions to create change, yet that requires interacting with industries and bringing them on board. Alumni suggested that IM4DC could help contact industries, educating and getting through to them to make the changes easier. One alumnus described it as:

> *'IM4DC can help with this because they have contact with the industry all over the world, as our contacts with other countries is limited'*

6. Attend trainings overseas such as in Australia, as some alumni did not have the chance to experience trainings in Australia. They thought that if they could attend programs in Australia, they could have more to say and address more changes. On top of that they could get first-hand information about the best practice in other countries is, and hopefully that would help them when they go back into their own countries.

7. Hold training in their own country was one recommendation to IM4DC programs, as some people thought it would be great if their colleagues could all attend these programs if they were held in their countries. Not everyone has the opportunity to attend trainings held in Australia, therefore implementing changes in their own countries turned out to be harder as not everyone has the same knowledge and perspective about certain issues.

8. Have follow up plans. Alumni suggested that although the programs taught them a lot about what they could do in their country, it would be best to follow up with them after the programs to ensure that changes are implemented and that they are attempting to do something.

> *'So I believe it is good to organise this exchange environment within the training, but we also have to be followed up seriously. Like you are just now doing. Having interviews with us at certain times, talk about things, asking us what stands in the way of our project, what blocks… well. This is how the project will go forward. So I need to congratulate you for this'*

5. CONCLUSION

This report presents the analysis of the data collected from semi-structured interviews with 25 alumni who have attended various IM4DC educational programs. In the conclusion section as below, we summarise our main findings and provide some general recommendations for the IM4DC to consider for future programs and activities.

5.1 Summary of Findings

Finding 1: Positive/innovative changes are being implemented by alumni, although these are not yet 'transformational' in terms of magnitude

The results of our interviews suggested that positive changes have already taken place, as all alumni have initiated and engaged in changes after attending IM4DC programs, and these changes were either at their individual level, their team level or their organisational level. Our analysis of these changes also indicates that most of them are innovative, and are already happening at the more mature stage of the innovation process – the implementation stage.

While it is positive to observe the various changes that IM4DC programs have generated for alumni and their organisations, it should be noted that these changes are not yet at the magnitude to be classified as "transformational". Transformational changes usually require a considerable amount of time that is far beyond the time span where this current evaluation project has covered, and could hardly be achieved if only one or two individuals are driving changes through. For transformational changes to take place, a critical mass needs to be accumulated in alumni's organisations so that a sufficient number of people can take up the change agent role and collectively commit to the organisational change and make things happen.

Finding 2: Enhanced leadership capabilities

From the changes the participants reported, we can observe a good level of leadership capabilities as manifested in alumni's reported change initiatives. Most evidence capability tends to occur at the interpersonal aspect of leadership, such that most participants demonstrated interpersonal skills such as influencing, networking, interacting and leading others. This suggests that the IM4DC training encourages the interaction and building relationships aspects of a leadership role. There is also evidence that the conceptual aspect of leadership and the technical/administrative aspect of leadership are manifested, although to a less extent.

It is worth noting that our findings reported on leadership derive from indirect observation based on participants' interviews, and we recommend using more rigorous approaches to measure leadership development in the future. Also, if IM4DC intends to

put a stronger focus on leadership capability development during programs, more and higher impact change may be generated.

Finding 3: Networking among alumni is continued after the program

Alumni tend to maintain a good level of contact with each other after attending the IM4DC program, especially for those from the same country. Some associations and alumni groups have been voluntarily formed by some alumni, either in real life or through social media, indicating their shared identity of "IM4DC alumni" and strong motivation to stay connected.

It should be noted, however, that most of these contact and networking tends to be at personal/friendship level and general information sharing about what each other is doing, with only a small number of them developing more substantial collaborations at professional level. For some alumni, the challenge lies in identifying common ground with others. It is also possible that opportunities to collaborate may not be readily and immediately available, but effective maintenance and continuous development of these networks may lead to future partnerships once opportunities arise.

5.2 Recommendations to IM4DC

Based on our findings, we also have several general recommendations for IM4DC to consider in future programs and activities:

1. **Offer systemic training in leadership and change management:** IM4DC could offer alumni more systemic training in change management so that alumni are equipped with the knowledge, skills and competencies to carry out change in their workplace. Alumni need to understand the complexity of organisational change and the politics associated with it, and be prepared to deal with resistance from other members in their organisations. Effective change management involves high-level self-regulation, interpersonal, and leadership skills, and requires individuals to develop solid self-awareness as well as capability to influence others. Such focus could be more strongly emphasised in all future IM4DC programs.

2. **Train alumni to be trainers for their colleagues:** After returning home, several alumni have organised trainings for their colleagues so that they could pass on the knowledge they gained at the IM4DC. This is a useful practice as it helps disseminate knowledge to the broader population in a relatively cost-effective way. IM4DC could consider building in a "train the trainer" component in its educational programs so that alumni are equipped with the skills to be effective trainers after returning home. For broader and more transformational change to

take place, it is vital that more people are provided with the knowledge and skills such that the need for change can be commonly understood.

3. **Design a rigorous longitudinal and multisource assessment process to track participants' change**: To ensure participants have truly developed and improved their knowledge, skills, behaviours and capabilities by attending IM4DC programs, and to more fully assess the effect on results, a more rigorously design measurement tool should be employed to assess participants' competencies and behaviours prior to participating in IM4DC programs, as well as post the programs and after a certain period of time going back home. There are also assessments to track participants' development of social networks during and after the programs. Such systemic assessments would provide objective data to track participants' development over time, and also allow IM4DC to maintain connection with alumni and stay tuned about their development needs on an ongoing basis.

   While the change on *results and impact* (i.e. the level 4 outcome in Kirkpatrick & Kirkpatrick's model) may be more complex and difficult to be tracked over time, it is also possible to work with alumni and develop innovative mechanisms that make such tracking meaningful in their context. For instance, it is possible to track change of their team and organisation's accident rate, financial performance, employee retention, level of morale and engagement, customer satisfaction, among others. However, these outcomes are usually affected by multiple factors that are beyond the participation in training itself.

4. **Focus on developing conceptual/strategic leadership:** To achieve higher level impact and more transformational changes that IM4DC is aiming for, it is important to put more emphasis on developing participants' conceptual leadership so that they can become thought-leaders and engage in strategic planning and decision making to bring about long-term results. For instance, training can be targeted in areas such as systems thinking, innovation and creativity.

5. **Create a platform for networking and sharing of innovative practices:** It can be observed that some challenges the alumni were facing are common (e.g. resistance from people) yet some have employed innovative practices to make things happen at their work. For instance, one alumnus initiated and organised a roundtable discussion to invite neutral and open discussion. The IM4DC could consider collating these innovative practices and success stories, and publicising in its alumni network so that people could learn from each other. This can also facilitate the creation of community of practice so that alumni maintain meaningful connections. Lack of funding has also been identified as a key issue for many alumni, thus encouraging people to come up with creative ways in

tacking funding issue (e.g. sharing and exchanging resources) and compiling that knowledge would be of value for alumni.

6. **Regular follow-ups with alumni:** Alumni are keen to have follow-ups from the IM4DC and to be continuously advised during the implementation of their return-to-work plans. It would be of value for IM4DC to regularly check in with alumni, understand their progress and identify ways to support them going through barriers and challenges.

7. **Training and developing multiple key actors in the system at the same time:** The alumni have indicated that one of the barriers with change is that others in the system (e.g. government) do not understand the needs for change, and thus greatly limiting what they can do. It might be useful to consider training a class full of participants from one country, with representatives from government, industry, NGO, academic, among others, so that all key players and decision makers are on the same page and speak the same language when it comes to designing and implementing broader social and cultural changes.

8. **Employing effective methodologies to enhance learning and improve learning transfer:** The leadership development research has indicated that for effective learning to occur and "stick", it is vital to complement offsite, classroom learning with on-the-job learning at workplace (Day, 2012). If possible, we recommend IM4DC to consider designing programs that better integrate offsite development with work development. For instance, breaking up the 4-week intensive training into two 2-week block, with 6-12 months interval to allow participants go back to work and practice the learning. Other learning methodologies that have been found highly effective include: training the managers of the participants about how to provide an environment to support the learning and learning transfer; providing coaching and mentoring support as follow up, among others.

6. REFERENCES AND FURTHER READING

Anderson, N., De Dreu., C.K, & Nijstad, B.A. (2004). The routinization of innovation research: a constructively critical review of the state of the science. *Journal of Organizational Behaviour,* 25, 147-173.

Chapman, J.A. (2002). A framework for transformational change in organisations. *Leadership and Organization Development Journal,*23, 16-25.

Conway, J. M. (1999). Distinguishing contextual performance from task performance for managerial jobs. *Journal of Applied Psychology, 84*(1), 3-13.

Crossan, M.M., & Apaydin, M. (2010). A multi-dimensional framework of organizational innovation: A systematic review of the literature. *Journal of Management Studies,* 47, 1154 – 1191.

Day, D. V. (2012). The nature of leadership development. In D. V. Day & J. Antonakis (Eds.), *The nature of leadership* (2nd ed., pp. 108-140). Los Angeles, CA: Sage.

Dierdorff, E.C., Rubin, R.S., & Morgeson, F.P. (2009). The Milieu of managerial work: An integrative framework linking work content to role requirements. *Journal of Applied Psychology,* 94, 972-988.

Golembiewski, R.T. (1979). *Approaches to Planned Change Part II: Macro level Interventions and Change-agent Strategies.* Marcel Dekker, New York, N.Y.

Kirkpatrick, D. L. & Kirkpatrick, J. D. (2009). *Evaluating training programs: The four levels* (3rd Ed.). Berrett-Koehler: San Francisco.

Kolk, N. J., Born, M. P., & van der Flier, H. (2004). A triadic approach to the construct validity of the assessment center: The effect of categorizing dimensions into a feeling, thinking, and power taxonomy. *European Journal of Psychological Assessment, 20*(3), 149-156.

Kotter, J. P. (1990). *A force for change: How leadership differs from management.* New York: Free Press.

Scullen, S. E., Mount, M. K., & Judge, T. A. (2003). Evidence of the construct validity of developmental ratings of managerial performance. *Journal of Applied Psychology, 88*(1), 50-66.

Watzlawick, P., Weakland, J.H and Fisch, R. (1974). *Change: Principles of problemformation and problem resolution.* Norton: New York, NY.

West, M. A., & Farr, J. L. (1990). *Innovation and creativity at work: Psychological and organizational strategies.* Wiley: Chichester.

7. APPENDIX: INTERVIEW SCHEDULE

Here we present the interview schedules as designed by ALL@UWA. It was attempted to address as many questions as possible, but flexibility was allowed during the interviews to allow participants elaborate as much as possible and to take the time probing into questions if necessary.

1. Can you tell me about your job – what it is/who you work for?

Possible Prompts

- What is your job title?
- How long have you been in your job/ has your job (or position) changed since attending IM4DC programs?
- What organisation do you work for?
- What are your main responsibilities?
- How is your job structured? (Who do you report to? Do you work in a team? Etc)

2. What IM4DC activities have you attended? And how long ago did you complete them?

3. How was your overall experience with the program you've attended?

Possible Prompts

- What were the highlights of the programs that you attended (What do you remember from your course? What concepts/ideas/activities really stick in your mind)?

4. What were the general outcomes or consequences of your participation in the IM4DC program that occurred?

Possible Prompts

- What were these outcomes/consequences
    i. What made these outcomes possible?
- Which of these outcomes were intended and which were not intended/thought about before attending the course?
- Any other unexpected outcomes that resulted after you completed the program and came back to your work?
- Were these outcomes positive or negative for you?

- How have you developed your skills over the past year (or months depending on when they did the last program)? Was any of this development enhanced/prompted by the program

The following questions will be talking about changes that have been implemented in your workplace

5. Since completing the IM4DC courses, what changes have you implemented in your workplace?

Remember the goal of this question is to get a list of all the possible changes, not go too deep into specific changes

Possible Prompts

- What were the specific changes that you have implemented in your workplace?
    - Prompt at the individual level: e.g. what do you do differently now as a result of your course; what changes have you made in how you work?
    - Then prompt at a team level: e.g. what does your team do differently now as a result of your program? How did your leadership change as a result of the IM4DC activities?
    - Then organisational level: For example, what changes if any have been implemented in policy/organisational design/regulation/finance)
    - Was this the only change? Can you think of any other changes?
- Was this idea developed because of attending IM4DC?
    - What learning from the IM4DC programs led you to implement these changes?
- If the idea was developed after coming to IM4DC but not from the learning of the program, how did you arrive at doing this change?
    - Why did you initiate this action?

Now from all those changes that you have described – we would like to focus on only one change which you think has been most significant as a result of attending IM4DC, and ask you some further questions about them.

6. Why do you believe the change was a good idea?

Possible prompts

- How did you arrive at the idea?
- Why did you decide to initiate this action? [Prompt: Why did you choose to put your energy into this idea, and not something else instead?] [prompt: why was it good for yourself/team/organisation/country]
- Why was your idea appropriate to implement at that time/ in that situation/in your cultural and industry context?

7. How did you proceed? What steps did you take?

Possible Prompts

- What happened after you thought about the idea? Did you act on it soon after having the idea or did you let it sit until the right moment arose?
- Once you had prepared, how did you go about carrying out your goal/making your idea happen?
- What resources did you need? Did you need to bring others on board? If so, how did you do this?

8. What were the obstacles and how did you deal with these?

Possible Prompts

- Who was positive about the change and did they play any role?
- Who was resistant? How did you handle this?
- Were there any things that went wrong or didn't work as planned?
- What were the major setbacks or things that got derailed?
- What kept you on track to achieve your goal? [Probe: optimism, persistence, seeking help from others?]

9. What was the impact of the change?

Possible Prompts

- For you?
- For others?
- For the wider team or organisation?
- For the mining industry as a whole?

10. What was the overall outcome of the change?

Possible Prompts

- Were the outcomes positive or negative?
- If the change is still taking place, how has it been going so far? What are the initial outcomes you have observed?
- Did the change spin off into other positive changes
- Prompt for specific outcomes, for example what was the outcome for the environment/finance/community/economical/governance etc.

11. What are you planning to do next in your workplace?

Possible Prompts

- Is there anything you'd like to change in your workplace right now but have not attempted it?
- What steps have you been planning to take, to get to this in the future?
- What might get in the way? How will you overcome it?

- Is there any role that IM4DC could play to help you achieve this change?
- What skills/knowledge/resources might you need the IM4DC might be able to support you in obtaining?

The following question only if there was no change…

12. Unsuccessful changes

Possible Prompts

- Have you tried to implement something that has not been successful
- Why do you think it was unsuccessful? What were the main obstacles in place?
- How do you think they could be overcome in the future?
- What skills/knowledge/resources did you need that you didn't have?

13. Describe me the ways you have interacted/collaborated with other people within the IM4DC network?

Prompts

- What kind of interaction have you had with them? *For example, some may have facilitated the achievement of your goal*
- Describe how these interactions resulted in positive outcomes?
- Is there anything that could have done to further facilitate these networks?
- How do you keep in contact with other people you have collaborated with from the IM4DC network?

14. Outside the alumni did your social network expand at all as a result of your attendance on the IM4DC program?

Prompts

- Who else did you collaborate with outside the alumni network?
- How did you go about communicating with them?
- [if there is time] What are some of the positive interactions? How can things be done to improve these interactions?

15. What recommendations can you suggest to the programs?

Prompts

- What are the big challenges you face in creating sustainable and responsible mining in your country, and what role could IM4DC play in this?
- How do you think IM4DC could be improved to even further facilitate the outcomes up until now?

- What could IM4DC do to strengthen/enhance its impact?

16. I've gone through all of the questions that we have had prepared for you today, is there anything else that you have experienced or would like to share with us, that will help us with the evaluation of the programs provided by IM4DC?

[The End]