

Transdisciplinary Training Program: Reflections and Recommendations from the national and regional workshops, Stellenbosch, March 2016



This report was written by Sarah Schweizer, Vivi Stavrou, John van Breda and Carolina Adler, 3 June 2016.

Background

In 2014, the International Social Science Council (ISSC), START, and National Research Foundation of South Africa (NRF) brought together and supported transdisciplinary researchers and practitioners for an expert workshop to design an initiative to support and sustain capacity development in transdisciplinary (TD) research at national and international levels. The workshop was organized in response to calls from the Belmont Forum to strengthen capacity in the development, use, and evaluation of TD approaches. This increased emphasis on TD approaches in global change research for sustainability is indicative of the high degree of complexity of the problems that researchers on global change and sustainability have to address. It also reflects an ambition to ensure the relevance of the research produced, to drive science that can contribute effective and equitable solutions to those problems. It signals an aspiration to break the walls between research and society, captured in the idea of doing science with society, instead of for society.

The 2014 workshop produced outlines for curricula for Introductory Courses and Advanced Institutes of TD research. The proposed curricula have been designed to support and sustain the efforts to develop and build TD capacity at national to global level, targeting researchers and their TD research partners, as well as research managers and funders.

Introductory Training Workshops

A contribution to this larger initiative is the first set of introductory courses on TD research that this document reports on. The introductory training consisting of two back-to-back workshops was organised as an International Social Sciences Council (ISSC) activity, convened by START and the Centre for Complex Systems in Transition at Stellenbosch University in partnership with the Transdisciplinary Lab at ETH Zurich, Switzerland. Both trainings were made possible due to generous support of the National Research Foundation (NRF) of South Africa and the hosting of the Sustainability Institute in Stellenbosch, South Africa. The training workshops were designed for individuals interested in learning about the theories, methods, and examples of TD research and teaching. The curriculum for the introductory training program was developed and tested by researchers and practitioners with strong experience in doing, teaching, and writing about TD research. The full list of individuals who contributed to the curriculum design can be found in Appendix A.

The first 3-day national training took place 14-16 March 2016 and brought together 16 South African participants from the Stellenbosch University, NRF officials, representatives from governments, and local NGOs (Appendix B). The national training served as the first opportunity to engage with participants and test the developed curriculum. The training was followed by a day of reflection and evaluation by lead partners and facilitators to assess what worked and what didn't work during the previous 3-day workshop. As a result, the course was modified wherever possible for the second training workshop that served as an official pilot, based on the experience of the first training and participant feedback. The 3-day regional pilot training program took place 21-23 March 2016 and brought together 16 participants from a variety of countries including: Angola, Kenya, Namibia, South Africa, Zimbabwe, and Zambia (Appendix C). Participants from the national and regional training were selected by the NRF. Please see Appendix D for the full workshop program.

Overview of Training Content

DAY 1

Why TD? Africa's polycrisis at the time of the Anthropocene

Introduction to the Enkanini case study

Day one set the foundation for why transdisciplinary (TD) research is needed and what it entails. Mark Swilling laid the groundwork by discussing *Africa's polycrisis at the time of the Anthropocene*. He discussed two dominant discourses: Africa Rising and Africa Uprising. When dealing with the polycrisis, it is no longer appropriate to produce knowledge *for* society only. What has become equally important and urgent is the co-production of knowledge *with* society. Consequently, these 'hybrid' systems problems can no longer be approached in terms of the two-world theory of treating the 'natural' and 'social' as two fundamentally different and unconnected realities; which can only be worked on separately by the natural and social sciences in isolation of society. At best, these mono-disciplinary approaches will only produce partial solutions. However, when dealing with systems problems, what are needed today are fundamentally different approaches capable of *co-generating* integrated, sustainable solutions aimed at changing the system dynamics that created the problems in the first place. In other words, we can no longer be satisfied with merely explaining and understanding the complexity of the systems problems we are dealing with, but we also need to figure out ways and means of changing or transforming them. This is the case, because living in the Anthropocene means facing the planetary consequences of our own actions, and taking no action is also a form of action; avoiding being accountable for the consequences of our own actions is a profoundly un-ethical position we simply cannot afford.

He used three videos to purposefully stimulate reflection and discussion around these topics:

1. Next Economy Rotterdam Architectural exhibition: a video that attempts to capture snapshot visions of the Africa we see – a high energy, exciting, future-oriented Africa.
2. Kenyan rainmakers and weather forecasters – traditional and meteorological research methods and use. The video can be viewed here: <http://www.foodrev.net>.

Taken by Force video: Researchers as intermediaries in upgrading informal settlements and conducting exploratory research on sustainable solutions in Enkanini. It provides a TD story of life in an African slum. The video can be viewed here:

Short version: <https://vimeo.com/164426384>

Long version: <https://vimeo.com/164419981>

What is TD? Ontological, epistemological and methodological considerations

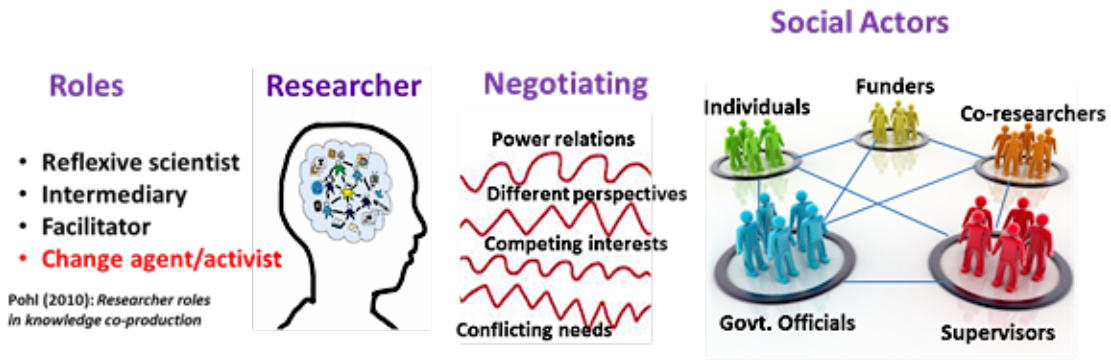
John van Breda then introduced TD research, not as a 'new science' per se, but rather as a new integrative methodology for doing science with society; using integrative methods for bringing together relevant science and societal actors with whom to co-produce the necessary theoretical and practical knowledge for contributing to transformative social innovation required for transitioning to a more just and sustainable society. The complex challenges facing the world today underline the need for effective TD research specifically orientated to resolve 'real-world' (i.e. encompassing policy-driven research toward societal benefit) problems that are too complex and multidimensional to be answered by singular research disciplines. It was discussed how TD pathways can generate new opportunities of co-production, resulting in new research questions. This can be expected to come from the co-production of three types of knowledge:

1. *Systems knowledge* (understanding the complexity of the current situation and its inter-related parts),

2. *Target knowledge* (understanding and ability to imagine different futures / desired situations, accounting for the values that underpin the desired outcome) and,
3. *Transformation knowledge* (understanding how to transition *from* the current *to* the more desired / sustainable future situation).

John van Breda also introduced the important distinction between mono-, multi-, inter-, and transdisciplinary approaches. In *mono-disciplinary* approaches problem framing is normally conducted by and within the individual disciplines only, working separately on the problem(s) at hand and in isolation of society. Consequently, problem statements and research questions are generated purely within the boundaries of the individual disciplines as there is no need for collaboration with social actors in this regard. There is also no knowledge integration happening between the disciplines as the processes of knowledge generation and integration are, once again, done entirely within the boundaries of the individual disciplines. With *multi-disciplinary* approaches, different disciplines work simultaneously, yet separately, on same problem field(s); however, there is no change in the way problem framing is conducted with problem statements and research questions are still being generated within the individual disciplines, without any collaboration with social actors in this regard. There is also no systematic knowledge integration occurring between the disciplines as this normally happens at the end of the research process as the sole function of a project leader in the form of a synthesis report. In *inter-disciplinary* approaches, problem framing and research questions are conducted *between* the different individual disciplines working simultaneously and collaboratively on the same problem field(s) at hand. In this regard, individual disciplines will actively interact and exchange concepts, methods, and information etc., normally done in the interest of enriching the base discipline's understanding of the problem(s) at hand. Although this exchange and interaction *between* the disciplines is different from the first two modes, it is similar in that social actors are still excluded from the scientific process. While non-academic researchers and other societal stakeholders may be consulted in the course of mono-, multi-, interdisciplinary research, it is only in *TD* approaches that this radical shift takes place with relevant social actors being brought into and acknowledged as equal partners in research process, starting with the process of joint problem framing – i.e. co-determining problem statements and research questions.

The group went on to discuss the changing roles of a researcher during an emergent TD research process. These roles are indicated in the below figure.



- **Reflexive scientist:** translating issues expressed in everyday language into theoretical problem statements and research questions [epistemic objects] and back again into ordinary language;
- **Intermediary:** understanding how to work with social actors' competing interests and shuttling between them to create better understanding of different and differing positions [avoiding premature convergence];
- **Facilitator:** helps thought collectives to meet the challenges of knowledge co-production by facilitating learning processes;
- **Activist:** perturbing unequal knowledge/power relations via knowledge co-production, thereby participate purposely in social change processes.

TD in practice: Tour of Lynedoch EcoVillage

Participants ended the day by immersing themselves in a site visit of Lynedoch Ecovillage; a project initially focused on a school for farmworkers' children but has since expanded to include a tertiary institution associated to the University of Stellenbosch and a socially mixed housing development.

Participants learned about the innovative way in which the buildings were designed and constructed using low-carbon local materials, solar panels for lights and geysers, and a wastewater treatment plant and biogas digester. Masters and PhD students from the Sustainability Institute are actively documenting various processes to see if replication may be possible.



DAY 2

Research Strategies & Paradigms

Day 2 began with a presentation by Lesley Le Grange on research paradigms and different modes of knowledge production. In examining different notions of 'disciplinary knowledge,' he outlined different modes of knowledge production and discussed the importance of

“locatedness of knowledge” as all knowledge production processes connect people, places, skills, etc. Professor Le Grange challenged the participants, asserting we need to re-examine what is accepted as empirical - that the current standards of empirical/falsification verification should not be uncritically accepted as the gold standard, they depend upon the social organisation of trust. This is a very contested terrain - the word trust is inclusive, often it is replaced by legitimacy that can be used to negate some knowledge. For example it is important in narrative research to ask the narrator to signify the meaning of their own story rather than the researcher interpreting and attaching their own meaning, legitimate or not. Furthermore, that notions of what are empirical facts need to be expanded from the privileging of what is seen and heard, to feelings, to taste. We need to rethink the separation of ontology and epistemology, the separation of knowledge from being. Methods were discussed as not a set of procedures for reporting reality, but rather as performative and creative as they assist in producing a set of realities and versions of the world. He put forward the notion of ‘territoriality’ and questioned the methodological focus on replication and generalisation of results - what is replicable is the method, but because of the different contexts, the results are not replicable. Maybe instead of been fixated on generalizability of results it could be good enough to rely on examining what knowledge is produced and transferring learning from one context to inform research in another context. He argued that academic researchers need to loosen their attachment to the paradigms that they were taught to believe is the right way to do science, so that there is space for other ways of thinking, and to be open to other ways of knowing and experiencing. We are experimenting with and exploring how to include other ways of thinking and where the research questions are co-generated through societal engagement and not determined by the canons of science.

Complexity / Systems Thinking

Jannie Hofmeyr and Rika Preiser then transitioned into a presentation and discussion about complexity and systems thinking. Six generators of complexity were discussed: internally heterogeneous system, nonlinear interactions between parts of the system (feedback), net-like causal structure of the system (high connectivity), agents that adapt, radical openness, and contextuality. The first four generators make up what is known as a Complex Adaptive System (CAS). The last two generators, radical openness and contextuality, speak to wicked problems and make prediction of complex systems extremely difficult.

Indigenous Research Methodologies & Methods: Indigenising TDR

Thenjie Major discussed the philosophy and reasoning for using Indigenous research and narratives. She used several of quotes to emphasize the importance of African context and how research methodologies need to be contextualized to be useful. One example was from Kwesi Prah (1999): “we cannot in all seriousness study ourselves through the eyes of other people’s assumptions. I am not saying we must not know what others know or think of us. I am saying we must think for ourselves like others do for themselves.” Major reflected on the need for African researchers to understand themselves and study themselves through their own eyes and viewpoints. The session also outlined how indigenous knowledge embedded in proverbs, stories, and cultural experiences can bring about the need for new research methods, questions, processes, and different types of analysis that may not be accessible through conventional Western methods.

Visit to Enkanini TD Case Study

The group ended day two by visiting the research center in Enkanini, an informal and illegal settlement. The site visit was led by Yondela Tyawa and Berry Wessels, two researchers of the multi-year TD project focused improving local living conditions through the generation

of small-scale innovations and transformative knowledge. Several small-scale innovations, through co-generation of research questions and approaches, resulted in the implementation of a solar electricity solution for paying households and various initiatives targeted at recycling and re-using waste material as well as rainwater harvesting.

Berry Wessels spoke about the challenges of undertaking TD research in Africa noting that power dynamics in a context such as Enkanini played a central role and that building



relationships within the community, prior to taking action was critical. He indicated that integrating local knowledge allows research methodologies to be adapted to suit the context and increases the chance of generating transformative knowledge.

DAY 3

Actor Constellation Activity

On the final day, Sarah Schweizer facilitated an interactive session that unpacked the multiple actors within the Enkanini TD case study that participants experienced the previous afternoon. In the role-play, scientific and societal actors involved in the Enkanini project were represented and positioned around the central research question. The distance from an actor to

the research question, and to other actors, expressed how relevant (s)he was in the Enkanini project. The exercise revealed assumptions on the other actors' relevance in the case study, and their potential contributions to the project. The role-play helped to make these assumptions explicit and encouraged joint deliberation on an adequate position. It also emphasised that the project team and actors can be re-defined as new actors come in or other actors become less relevant or disappear.

TD Methods / Approaches & Case Study Research

Carolina Adler presented aspects of the design and implementation of the CCES Winter School in Switzerland as an example of another type of TD training and capacity building. She also spoke of her own experience working on a TD project with the Yorta Yorta in Australia. The film, *Nhawul Bultjubul Ma* (To See with Both Eyes), was shown to illustrate initial challenges in bringing scientists and indigenous people together in a TD project, but also what can be achieved given the right conditions, time and other resources necessary to build these relationships for a fruitful collaboration. The film was produced in Echuca, Australia for the Indigenous Knowledge for Climate Change Adaptation Conference in November 2012. The video can be viewed here:

<https://www.youtube.com/watch?v=LlpJu4Vfy9Q&w=560&h=315>.

Modeling & Narratives

Mark Dent spoke of the potential for utilizing mix-methods within TD projects through a combination of modeling and narratives approaches. His presentation illustrated the

importance of Collaborative Agent-Based Modeling and narratives while also indicating that it is an area that requires further work to determine how this approach can be best implemented for TD research purposes.

SenseMaker

Zhen Goh discussed the power of narratives from a TD perspective and how they can be useful to understand how a group constructs knowledge. She introduced SenseMaker® as a software that can make sense of stories in order to help inform steps for meaningful action. The SenseMaker® methodological process consists of four steps: 1. developing prompting questions, 2. creating signification questions and collecting stories and self-signification process, 3. analysing collected stories, and 4. facilitating a human sense-making experience where you share results with the story contributors. The software puts emphasis on individual stories and allows the individual to “signify” the meaning of their story. It does not rely on the interpretation of a researcher but instead puts the power back in the hands of the individual who owns the story.

Group reflections

The training program concluded with an emphasis on participant reflection of the training program and the application it may have at their home institutions. Participants were asked to organize in small working groups to discuss the following questions:



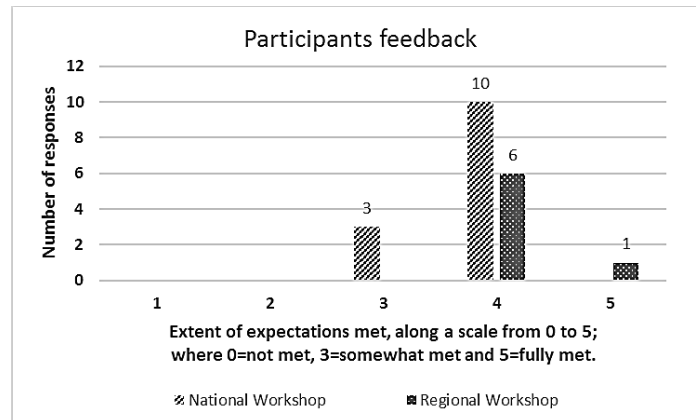
1. In groups of 4 discuss what you consider to be the most relevant aspects of TD and TD research to you (15 mins)
2. Then on a flipchart list the top 3-5 issues, topics, themes that you'd like to prioritise for further discussion (5 mins)
3. Given what you now know about TD research, what do you regard as opportunities for this approach in your work?

Each group assigned a spokesperson to present their discussion and key points back to the rest of the participants in plenary. Some examples of ideas, challenges, and comments include the following:

- Excitement around conducting socially relevant science that allows for creativity and change through an evolving organic process
- The need to be very practical in setting up systems to allow TD research and associated careers to develop. A shift is needed in understanding time, flexible project management, emphasis on processes rather than outputs only, and skill sets needed for reviewers, assessors, and supervisors.

- How do you tap into different funding sources in order to sustain a project over many years?
- TD is a transformative process. There is power for individuals to change and view and engage with science differently.

Participant feedback of the training program also included anonymous evaluation forms, which included 4 questions. Overall, the participants' responses were very positive regarding the format and facilitation of the training workshops, with the vast majority of respondents (n=22") regarding the workshops as having met their expectations in terms of learning about TD and the research process it entails.



Participants were also given the opportunity to provide comments on the key insights or take away lessons they gained from their participation in these workshops, with most responses confirming for us the usefulness of the workshops in facilitating learning processes and sensitization on the key elements of TD research. Some examples of these comments include the following quotes:

"TD allows integration/inclusion/collaboration from the outset and gives a practical manifestation to these terms"

"[I learned about the] potential use of TD as a 'game changer' within the context of science for development"

"I found the practical application of TD methods was truly an eye opener!"

"The overall presentation of the workshop was good, as it opened a whole new paradigm for me"

"TD as a process for building social capital!"

"I loved seeing the 'living' creativity, positivity, passion for co-creation and change. The field sites, case studies, videos, were most powerful in portraying this. Research with society is possible".

With regards to improvements to the workshop facilitation, content and process, the responses were generally constructive and offered many considerations that would be useful to take up in the design and development of other like workshops in future. For example, many respondents felt that clear and concrete case studies must accompany every theoretical input given to facilitate learning within an already intense and time-constrained setting. Time and space for reflection and interaction with other participants within the program schedule was also highlighted as a key need, where networking among

participants is also part of the social learning process.

Reflections & Recommendations

- Need to discuss the ethics of doing research and being active in the change processes – is there a difference between an activist who does research and a researcher who is an activist? Need to distinguish between a social change process and a research process. We have seen that a TD process can ignite a social change process, but it is not a social movement or a political movement.
- Important to consider the local context and adaptability and transferability of the training program. The “core” modules of this training program should be adapted to specific research contexts and socio-cultural realities.
- Discussions around Monitoring, Evaluation and Learning (MEL) approaches and how to collect information to support and monitor TD research.
- Important to emphasize how TD is different from multi- and interdisciplinary research and how consultations with non-academic stakeholders take different forms and not all of them are TD.
- The development and collection of short TD case studies is important to illustrate how TD evolves in different contexts.
- Important to note that some research is more suited to TD than other research contexts and types of issues.
- Implications for how to fund this type of research, in particular how to bring the notice of the need and impact of TD research to policy makers, to view it as a long term R&D investment.
- Desire to address the timelines of TD research, as they can be long and circuitous. One of the implications are the challenges for early career academic researchers entering into this slower, longer-term research that bumps up against the mono-disciplinary publish often or perish academic career track.
- How to grapple with the issue of time – when the target is always moving.
- Include a session on opportunities and challenges of conducting TD research.
- Participants pointed out a great need for TD capacity development on various levels: influencing research agendas, institutional awareness and support, training and short courses for early career scientists and practitioners.
- There is potential for community members to have a greater level appreciating the role of science by engaging with a TD process.
- More time should be spent during the field trip. Participants expressed a desire to hear more from the community-based co-researcher.
- The TD training agenda should be sent well in advance for participants to get a sense of what it will entail.
- Likewise, participants would like access to one or two papers on TD before the training program.
- Participants indicated they would like to receive a certificate for completing the training.
- Many indicated that several presentations on research paradigms and philosophy did not help their understanding of TD and instead added confusion.
- Participants provided positive feedback on field trips and participatory activities. It is recommended that we include more interactive sessions and case studies in future trainings.
- Participants would like to be exposed to a diversification of methods that meet the needs of all participants. And bring in different cases that can speak to multiple disciplines.

- Too much emphasis was put on the social science vs natural science disciplines. It would have been helpful to discuss how natural sciences contribute to a TD team and project.
- Participants should come to the training with a case study from their own work.
- Issue of reviewing and supervising students conducting TD research.
- How do we take forward the need and impact of TD to policy makers?
- Desire to see a session on how to mainstream TD approaches, methods and training more rigorously as well as more flexibly into university teaching and within research and grant making structures and systems.
- Furthermore, the trainers themselves recognised the importance of having prior face-to-face meeting time to discuss and co-design the key modules that would make up a given workshop, and this time (and associated resources) needs to be factored into the planning of the workshop itself.

Facilitators and organizers revised the training program based on this feedback and evaluation. The revised training program for the 3-day course can be found in Appendix E. The training programme for the 5-day course will include a greater focus on TD methods and application.

Next Steps

A number of opportunities are being considered to explore how to build upon this experience. The main target of the larger initiative are Future Earth researchers, including those linked to the relevant Belmont Forum Collaborative Research Actions, and the ISSC's Transformations to Sustainability program. However, Introductory Courses (3 days) and Advanced Institutes (7 days) could target broader communities of researchers doing TD, research managers/funders at the national and international levels, people interested in becoming trainers in TD methodologies, and stakeholders partnering in TD projects.

At a broader level, partners also recognize a need to coordinate and foster an Epistemic *Community of Practice* on TD. This is envisioned as a global platform of resources and exchanges linking together those involved in the Introductory Courses and Advanced Institutes, as well as the broader scientific community involved and interested in pursuing TD research. The organization of the Paris workshop in 2014 was a first step in the development of an international community of TD practitioners and researchers willing to become involved as trainers and advisors in this initiative.

In addition, the co-organizers are keen to explore ways by which this initiative could benefit early career scientists, for example through a partnership with the activities of Future Earth.

Appendix A: Facilitator List

Name	Position	Institution	e-mail
John van Breda	Programme Manager	Centre for Complex Systems in Transition, Stellenbosch University	John.vanBreda@spl.sun.ac.za
Mark Swilling	Academic Director	Centre for Complex Systems in Transition, Stellenbosch University	mark.swilling@spl.sun.ac.za
Vivi Stavrou	Senior Executive Manager	International Social Science Council	vivi@worldsocialscience.org
Sarah Schweizer	Director of Programs	START	sschweizer@start.org
Carolina Adler	Coordinator and Lecturer	Institute for Environmental Decisions (IED); Transdisciplinarity Lab (USYS TdLab), ETH Zurich	carolina.adler@env.ethz.ch
Lesley Le Grange		Faculty of Education, Stellenbosch University	llg@sun.ac.za
Jannie Hofmeyr	Professor	Centre for Complex Systems in Transition, Stellenbosch University	jhsh@sun.ac.za
Rika Preiser	Researcher & Lecturer	Centre for Complex Systems in Transition, Stellenbosch University	rika.preiser@spl.sun.ac.za
Thenjiwe Major	Senior Lecturer	University of Botswana	majorte@mopipi.ub.bw

			rte@mopipi.ub.bw
Zhen Goh	Senior Consultant		zhengoh@gmail.com mailto:zhengoh@gmail.com
Mark Dent	Regional Manager for Southern Africa	Alliance for Water Stewardship (AWS)	dentmarkclifford@gmail.com mailto:dentmarkclifford@gmail.com

Appendix B: National Training Participant List

Name	Position	Institution	e-mail
Kwabena Ayisi	Director: Risk and Vulnerability Science Centre	University of Limpopo	Kwabena.ayisi@ul.ac.za
Vincent Motebang Nakin	Acting Director: Risk and Vulnerability Science Centre	Walter Sisulu University	mnakin@wsu.ac.za
Jonathan Diederiks	Director: Global Change Programme	National Research Foundation (NRF)	Jonathan.diederiks@nrf.ac.za
Leocadia Zhou	Director: Risk and Vulnerability Science Centre	University of Fort Hare	Lzhou@ufh.ac.za
Kogilam Govender	Deputy Director	Government, Dept of Science and Technology	kogilam.iyer@dst.gov.za
Daniel Nyanganyura	Programme Specialist	ICSU Regional Officer for Africa	d.nyanganyura@icsu-africa.org
Nicky Allsopp	Research Manager	South African Environmental Observation Network (SAEON)	Allsopp@saeon.ac.za
Rendani Ladzani	Director: Reviews and Evaluations	NRF	rendani.lodzani@nrf.ac.za
Kgoale Mphahlele	Deputy Director	Government, Dept of Science and Technology	kgoale.mphahlele@dst.gov.za
Ntombizini Manana	Professional Officer: Global Change	NRF	ntombizini.manana@nrf.ac.za
James Meiring	Director: Reviews and Evaluations	NRF	james.meiring@nrf.ac.za
Shanna Nienaber	Deputy Director	Government, Dept of Science and Technology	Shanna.Nienaber@dst.gov.za

Guy Midgley	Prof: Botany and Zoology	Stellenbosch University	gfmidgley@sun.ac.za
Leluma Matoane	Director: Earth Systems Science	Government, Dept of Science and Technology	Leluma.Matoane@dst.gov.za
Joyce Olivier	Director: Reviews and Evaluations	NRF	joyce.Olivier@nrf.ac.za
Johannes Rautenbach	Chief Scientist: Climate Change and Variability	South African Weather Services	hannes.rautenbach@weathersa.co.za

Appendix C: Regional Training Participant List

Name	Position	Institution	e-mail
Lad Kazembe	Manager	National Remote Sensing Center	Lad.kazembe@gmail.com
Chipilca Barbosa	National Director	SASSCAL Angola National Node	Chipilca.barbosa@sasscal.org
Luiza Shekupe	Director	NCRST	lshekupe@ncrst.na
Indie Dinala	National Director	SASSCAL Zambia National Lodge	Indie.dinala@sasscal.org.za or idinala@yahoo.co.uk
Faridah Were	Senior Research Scientist	Kenya Industrial Research and Development Institute	faridares@yahoo.com
David Ngigi	Senior Scientist	National Commission for Science, Technology and Innovation (NACOSTI)	ngigimd@yahoo.com
Filipo Zulu	Acting Manager - STI Development	Natural Science & Technology Council	fzulu@nstc.org.zm
Antonio Alcochete	Director for Evaluation and Accreditation	Ministry of Science and Technology	a_alcochete@yahoo.com
Rungano Karimanzira	Director	Ministry of Higher and Tertiary Education, Science and Technology Development	rungano.pu@gmail.com
Kenneth Monjero	Assistant Research Scientist	KALRO Biotechnology Research Institute	kentrizakari@gmail.com

Jan Phalane	Liaison Officer	National Research Foundation	jan.phalane@nrf.ac.za
Michael Nxumalo	Director	National Research Foundation	michael@nrf.ac.za
Anna Matros Gorees	Director	NCRST	amatros-goreses@ncrst.na
Dr Alex Kanyimba	Deputy Director	Uninversity of Namibia	okanyimba@unam.na
Dorothy Ngila	Project Officer	National Research Foundation	dorothy.ngila@nrf.ac.za
Sepo Hachigonta	Director	National Research Foundation	sepo.hachigonta@nrf.ac.za

Appendix D: Transdisciplinary Training Programme: 14 -16, 21-23 March 2016

The introductory training workshop is an International Social Sciences Council (ISSC) activity, convened by START, the Centre for Complex Systems in Transition at Stellenbosch University in partnership with the Transdisciplinary Lab at ETH Zurich, Switzerland.



The training programme is supported by the National Research Foundation of South Africa.



Learning Objectives: The introductory training workshop is designed for a broad audience and include researchers, research managers and funders, civil servants, government departments, and NGOs interested in learning about theories, methods, and examples of transdisciplinary research. The objective is to transmit the principles of TD research and the various steps to follow; introduce to the most frequent methods used; teach case studies; include field visits, introduce M&E tools and the resources developed in the Epistemic Community.

DAY 1	
08h00 - 08h30	
Registration	
08h30 - 10H00	Exercises:
<p>Introductions and Appreciative Inquiry [Sarah Schweizer & Jon van Breda]</p>	<ol style="list-style-type: none"> 1. Group 'categories' – Answering with your feet 2. Dyad introductions (dyad, introduce your neighbor back to plenary)
10h00 - 10h30: Coffee/Tea	

<p>10h30 – 12h30 [Mark Swilling]</p> <p>Why TD?</p> <p>3x videos: African snapshots; Kenyan rainmakers and weather forecasters; Sustainability Institute Enkanini iShack</p> <p>Africa’s polycrisis at the time of the Anthropocene</p> <p>Introduction to the Enkanini case study</p>	<p><u>Exercise:</u></p> <p>What are the 3 biggest challenges facing east and southern African countries? (prioritise)</p> <p>Discuss how challenges presented by individuals are complex and wicked problems that require different and new approaches.</p>
<p>12h30 – 13h15: Lunch</p>	
<p>13h15 – 15h15 [John van Breda]</p> <p>What is TD?</p> <p>Ontological, epistemological and methodological considerations</p> <p>TDR Process: Phases and Steps</p>	
<p>15h15 – 15h30: Coffee/Tea</p>	
<p>15h30 – 17h00</p> <p>Tour of Lynedoch EcoVillage</p> <p>TD in practice</p>	
<p>17h00 – 17h30</p> <p>Reflections & Learning Points</p>	

<p>DAY 2</p>	
<p>08h00 – 08h30: Coffee / Tea</p>	
<p>08h30 – 10h00 [Lesley la Grange]</p> <p>Research Strategies & Paradigms</p>	
<p>10h00 – 10h30: Coffee/Tea</p>	
<p>10h30 – 12h30 [Jannie Hofmeyr] [Rika Preiser]</p> <p>Complexity / Systems Thinking</p>	

12h30 - 13h15: Lunch
13h15 - 15h15 [Thenjiwe Major] Indigenous Research Methodologies & Methods Indigenising TDR Video: Yorta Yorta – Seeing with two eyes
15h15 - 15h30: Coffee/Tea
15h30 - 17h00 Visit to Enkanini TDCS
17h00 - 17h30 Reflections & Learning Points

DAY 3	
08h00 - 08h30: Coffee / Tea	
08h30 - 10h00 TD Methods / Approaches TD Case Study Research ETH TDCS [Carolina Adler] Enkanini TDCS [Mark Swilling] Actor Constellation [Sarah Schweizer]	Exercise: Actor Constellation: http://www.naturalsciences.ch/topics/co-producing-knowledge/methods/actor-constellation-final Three Types of Knowledge: http://www.naturalsciences.ch/topics/co-producing-knowledge/methods/three-types-of-knowledge-tool
10h00 - 10h30: Coffee/Tea	
10h30 - 12h30 TD Methods / Approaches Modeling & Narratives [Mark Dent] SenseMaker [Zhen Goh]	

12h30 - 13h15: Lunch	
13h15 - 15h15 Individual & Small Group Work	
15h15 - 15h30: Coffee/Tea	
15h30 - 17h00 Plenary Feedback	<u>Exercises:</u> <ol style="list-style-type: none"> 1. Reflections and feedback on the process and content of the TD Training workshop design (small groups, plenary feedback) 2. The 'Minute Paper' written evaluation
17h00 - 17h30 Reflections & Learning Points	

Appendix E: Revised Transdisciplinary Training Programme Based on Lessons Learned

Learning Objectives: The introductory training workshop is designed for a broad audience and includes researchers, research managers and funders, civil servants, government departments, and NGOs interested in learning about theories, methods, and examples of transdisciplinary research. The objective is to transmit the principles of TD research and the various steps to follow; introduce to the most frequent methods used; teach case studies; include field visits, introduce M&E tools and the resources developed in the Epistemic Community.

Facilitators will be determined based on location of training and partners involved.

A. Training process:

1. Work with partners / host country organisation to:
 - (1) clarify and agree on training objectives and the training content and methodology,
 - (2) identify target audience and customise elements of the basic training module, eg weighted towards research managers, grant managers, research funding councils; weighted towards researchers – TD experience or not; post-doc, PhD level and/or Masters; balance of natural and social scientists; uni or multi-sectoral group; national or regional.
 - (3) plan a local field trip
 - (4) identify local scientist/s to plan the field trip and post field trip discussions; approach for a guest input on local TD experiences, examples, indigenous research, country-level perspectives on science with society, and if appropriate collaborate in developing a case study.
2. List of participants one month before training
3. Before and after survey of participants: synchronised questions enabling post-survey evaluation.

B. Develop 6 training products:

1. 1 or 2 pager and a ppt presentation describing the TD Capacity Building Initiative, the objectives and basic outline of the 2x trainings and the collaboration between the host organisation and the TD training team.
2. A pre-training reader on TD.
3. The Enkanini TD case study with guide notes on how to develop other TD case studies.
4. Two TD training modules: 3-day intro course and 5-day training module, together with pre- and post-survey, facilitators and a participants guide.
5. A Training of Trainers training course. The idea is to build a cohort of trainers around the world. In my experience it's best to gather them together and do a ToT that goes through the basic and advanced training and explicitly focuses on

process and training methods as well as anticipating complications and extra knowledge that will be required.

DAY 1	
08h30 - 09h00	
Registration	
09h00 - 10h00	<u>Exercises:</u>
Introductions and Appreciative Inquiry	<ol style="list-style-type: none"> 1. Group 'categories' – Answering with your feet 2. Dyad introductions (dyad, introduce your neighbour back to plenary)
10h00 - 10h30: Coffee/Tea	
10h30 - 11h45	<u>Exercise:</u>
<p>Why TD?</p> <p>Setting the foundation and today's complex problems requiring new approaches</p>	<p>What are the 3 biggest challenges facing your region and countries? (prioritise)</p> <p>Discuss how challenges presented by individuals are complex and wicked problems that require different and new approaches.</p>
11h45 - 13h00: Lunch	
13h00 - 14h15	
<p>What is TD?</p> <p>Compare and contrast TD with mon-, multi-, inter-disciplinary and participatory research approaches.</p> <p>Introduction to a TD case study</p> <p>This presentation will provide a foundation and have less focus on ontological, epistemological and methodological considerations</p>	
14h15 - 17h30	
<p>TD in Practice</p> <p>Appropriate site visit based on location</p> <p>Coffee/Tea during visit</p> <p>Reflections & Learning points</p>	

DAY 2

08h30 - 09h00: Coffee / Tea

09h00 - 10h30

TDR Process: Phases and Steps [with reference to a TD case study]

10h30 - 11h00: Coffee/Tea

11h00 - 12h30

TD Case Study and Four Phases of TD

Facilitators will write up a concise but detailed interactive/learning case for participants to use in activities around the four phases of TD. The case will provide descriptive text around various problems and actors in the case without being overly explicit. Facilitators will allow participants to read the case, introduce the first exercise associated with Phase 1, and then split them into groups to carry out the exercises.

- Facilitators will hand out cards to each participant during Phase 1 which describes their roles and priorities. Example of roles should be based on the case (2 researchers, various individuals representative from the community, individuals may be asked to assume a role that includes documenting the TD process – camera, video, infographic, stories, etc.)
- Participants will maintain the same role throughout each phase.

Phase 1: Preparing and Designing

A modification of the Actor Constellation will be facilitated:
http://www.naturalsciences.ch/topics/co-producing_knowledge/methods/actor_constellation_final_

Preparation and materials: Cards with specific information on each role

12h30 - 13h15: Lunch

13h15 - 15h15

Phase 2: Joint Problem Framing

This type of information would go to TD researchers: What methods will you use? (we will provide a list of methods) How will you contextualize the methods to fit your case?

Debrief: Ask social actors what they felt about the process and approaches that the TD research team used? Show a short film such as Yorta Yorta to demonstrate how TD

researchers have to view the project from various roles.

Preparation and materials: Cards with specific information on each role; list of methods for researchers (cameras, narratives/storytelling, focus groups, etc.)

Phase 3: Co-designing and Implementing Social Change Experiments

Discussing and coming up with possible solutions as a group. Develop an outline of an implementation strategy. What obstacles do you anticipate?

Phase 4: Bringing Results to Fruition

How will the results be communicated and to whom? What lessons can feedback to researchers and universities? What types of theoretical and methodological innovations can be produced? How will results reach funders and policy makers?

15h15 - 15h30: Coffee/Tea

15h30 - 17h00

Review Panel for TD research:

TD teams pitch their implementation strategy and a panel of critical reviewers will provide feedback to the team.

17h00 - 17h30

Reflections & Learning Points

DAY 3

08h30 - 09h00: Coffee / Tea

09h00 - 11h00

Monitoring Evaluation and Learning (MEL):

- How to integrate MEL in the TD process?
- Challenges of developing and implementing MEL practices
- Concrete examples of how to do it
- Criteria and standards from various perspectives to assess TD processes, outcomes, and impacts
- Reflect back on previous day and the four phases of TD – How would we do MEL for each phase?

11h00 - 11h30: Coffee/Tea

11h30 - 12h30	
Communicating Process and Outcomes	
Discussion of different types of audiences, purposes, and outputs	
12h30 - 13h15: Lunch	
13h15 - 14h30	
Individual & Small Group Work	
Participants spend time discussing their own projects and application of TD	
14h30 - 15h00: Coffee/Tea	
15h00 - 16h00	
Plenary	
Participants share post-training application ideas and challenges	
16h00 - 17h00	<u>Exercises:</u>
Plenary Feedback on Workshop	<ol style="list-style-type: none"> 1. Reflections and feedback on the process and content of the TD Training workshop design (small groups, plenary feedback) 2. The 'Minute Paper' written evaluation
17h00 - 17h15	
Reflections & Closing	