

Enhancing Climate Services for Infrastructure Investments (CSI). Trainer Handbook

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Registered offices
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Friedrich-Ebert-Allee 32 + 36
53113 Bonn, Germany
T +49 228 44 60-0
F +49 228 4460-17 66

E climate@giz.de
I www.giz.de/climate, www.adaptationcommunity.net

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Responsible/Contact:
Benjamin Hodick, benjamin.hodick@giz.de

Authors:
Martin Becher, NIRAS - IP Consult GmbH
Dr. Andrea Schlönvoigt
Britta Heine

Design/layout:
Ira Olaleye, Eschborn

Photo credits/sources:
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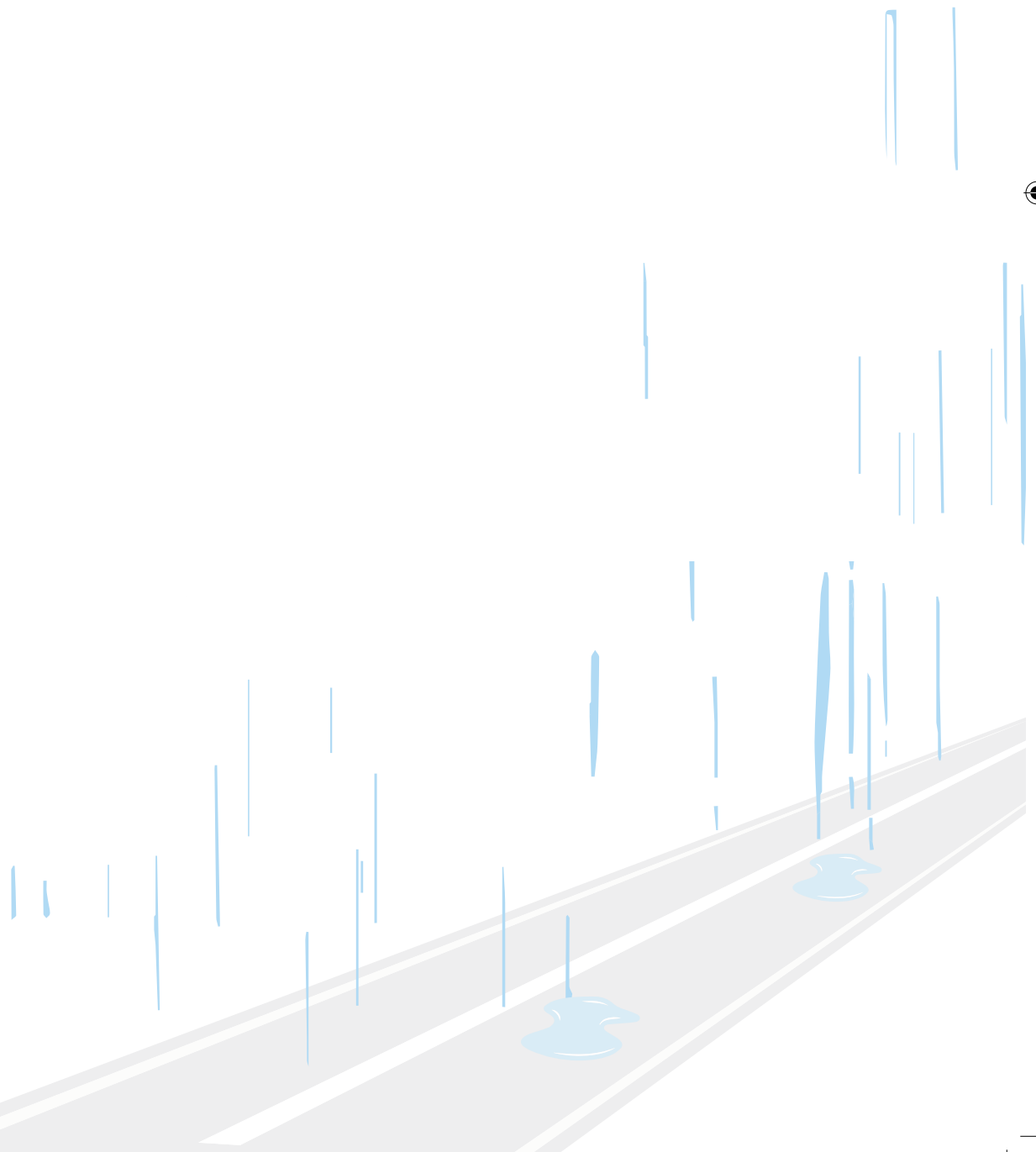
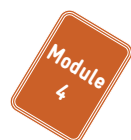


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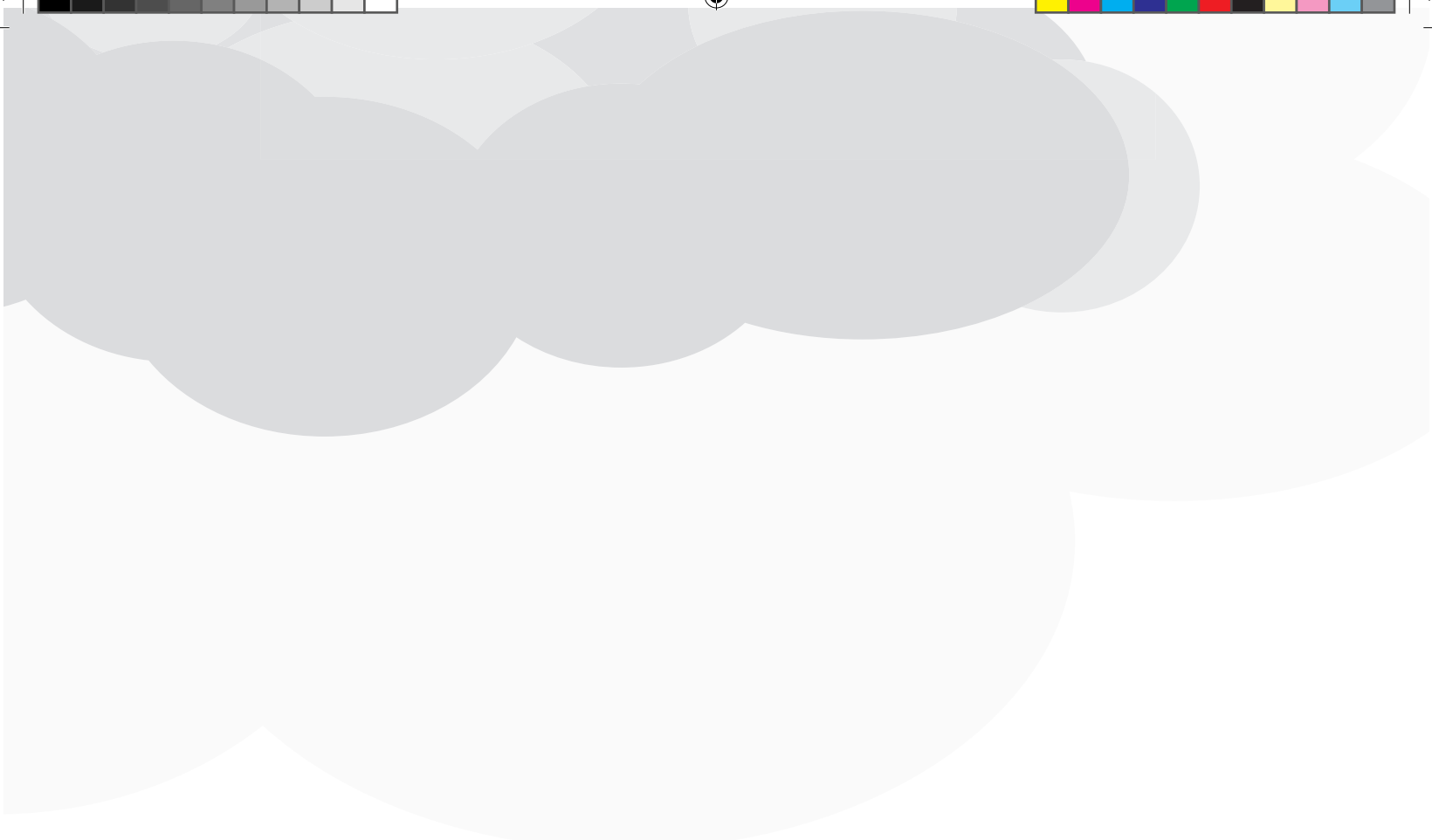
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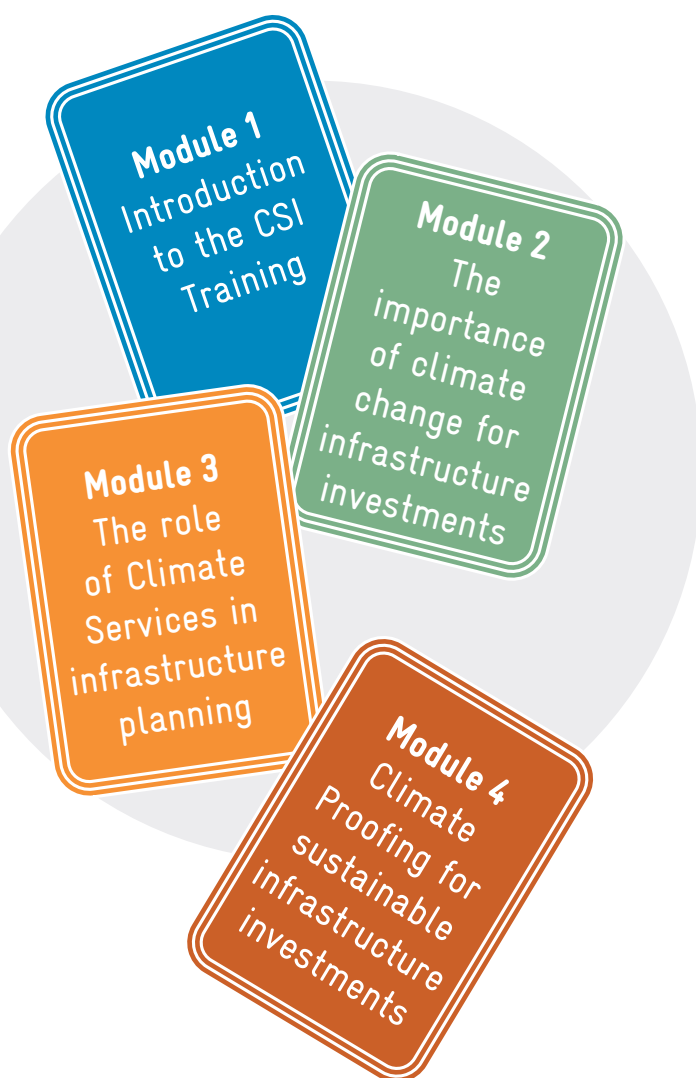
1 Introduction to the CSI training



Capacity Development is a key element of the Global Project Enhancing *Climate Services for Infrastructure Investment* (CSI). Through different formats and cooperation with various partner institutions, CSI seeks to

- Enhance capacities for scaling up success;
- Provide learning opportunities and trainings on CSI-related topics themes; and
- Support pilot processes to consider Climate Services in infrastructure investment processes.

At the core of CSI's capacity development activities, the project offers a training focused on considering Climate Services in infrastructure planning. The training is structured into four modules, focusing in:



The trainings are designed for practitioners, technical staff and decision makers responsible for the provision of Climate Services, and planning and implementation of infrastructure investment, such as Hydro-Meteorological Institutes, line ministries, academia, private infrastructure investors, and engineering organizations.

All trainings are based on the Harvard Case Methodology, which conveys teaching messages mainly through interactive practical work by participants. The Trainings include exercises using a fictitious situation closely based on real life conditions and challenges. Experiences drawn from actual CSI's descriptions enrich the trainings by providing concrete examples and showcasing how solutions can work in reality. All training course and exercise can be adapted to different demands and contexts.

All courses are designed for 3 to 5 days and can be delivered in English, Spanish, Vietnamese, and Portuguese.

1.1 Getting started as a trainer

A comprehensive set of material has been developed to support trainers.

This **Trainer Manual** provides relevant knowledge to run all modules of the CSI training. It shares knowledge and experiences from the test and pilot phases as well as other training events using participatory methodology.



- **Part I** provides necessary information on the sessions. It also gives methodological suggestions for implementation, and shares trainer-exclusive insights on how to run exercises. However, the authors would like to highlight that from a participatory training viewpoint, it is the trainer's responsibility to choose the training contents and respective tools in order to meet the participants' needs. Only by appreciating and building on participants' experiences can the training make a difference to their performance afterwards.
- **Part II** gives a general introduction to participatory methodology as well as to the Case Method on which the training courses are based. It serves as an introduction to participatory training methods in general.

The **Participant Handbook** provides the theoretical framework to run the training sessions. In addition, it provides the storylines for running the exercises. It explains the case-work tasks and provides a summary of learning points and references.



A **library of PowerPoint slides** support the introduction to certain topics and exercises for each course.



Short animated films:



- **Climate change adaptation: It's time for decisions now!** (5:42 minutes)

GIZ and the Potsdam Institute for Climate Impact Research jointly developed the animated short film. The film explains climate change and its consequences, introduces adaptation and illustrates adaptation options. It advocates for a participatory approach to adaptation planning and highlights the benefits of timely action rather than delaying decisions. Climate change adaptation: It's time for decisions now!

For the training, a viewing is generally recommended in a preparatory session. It does not take up much time and is available in twelve languages. Available at [YouTube](#).

- **Enhancing Climate Services for Infrastructure Investments** (3:52 minutes)

The CSI project developed a film on its work. It explains the functioning of the CSI project, and the importance of considering Climate Services in infrastructure investments. It advocates for an exchange between Climate Service providers and users, in order to prepare tailor-made Climate Services. In addition, it provides a brief overview on Climate Proofing and CSI pilot projects. Available at [YouTube](#).

1.2 Course overview

1.2.1 Rationale

Infrastructure adapted to the impacts of climate change is one of the United Nations Sustainable Development Goals. A number of countries, including Brazil, Costa Rica and Viet Nam, have already launched efforts to increase the resilience of their infrastructure and have included infrastructure climate risk management in their National Adaptation Plans (NAP). For implementing their NAPs, the partner countries' are required to establish Climate Services that are aligned to the requirements of decision-making and planning processes. A few international initiatives have begun to address this challenge, including the Global Framework for Climate Services (GFCS). The GIZ-CSI project translates the international framework of action of the GFCS into national level contexts and conditions in its partner countries and focuses on *Enhancing Climate Services for Sustainable Infrastructure Investment (CSI)*.

It supports the country-specific institutional and technical design of structures to enable countries to make better use of Climate Services and to include them in their infrastructure planning system. This includes institutionalizing a sustainable interface between users (e.g. infrastructure planners, operators and owners) and Climate Service providers – commonly referred to as a Climate Service User Interface Platform (UIP). It promotes the concept of co-production of Climate Service products. This means including users of Climate Services right from the beginning in the development process of Climate Service products to become tailor-made. Moreover, CSI also focuses on climate-sensitive infrastructure planning methods. Together with decision-makers, the project develops recommendations for adapting planning procedures and regulations in line with the climate-proofing approach, e.g. via cost-benefit analyses, the development of building standards or environmental impact assessments (EIA).

Based on the Public Infrastructure Engineering Vulnerability Committee (PIEVC) protocol that Engineers Canada developed to analyze climate risks to infrastructure, the project aims to build local capacity by means of a learning-by-doing approach. With support of NIRAS – IP Consult GmbH the CSI Training was developed and to disseminate this approach and to operationalize the adapted planning procedures and

regulations following the Climate Proofing method originally developed by GIZ based in the *Guidelines Integrating Climate Change Adaptation into Development Cooperation* (OECD 2009).

One essential component of the capacity development approach of the CSI project is training and ensuring that training capacities in the CSI partner countries are locally enhanced and sustained. Trainings are envisioned to accompany and complement activities of the project related to enhancing Climate Service provisions and their utilization for infrastructure investments. This specifically refers to the development of training approaches that are complementing learning experiences from selected infrastructure pilot activities focusing on the Climate Proofing of ports and transition lines (Brazil), bridges (Costa Rica), sluice gates (Viet Nam) and dams (Ethiopia-NBI).

- With this course trainees will improve their **skills and knowledge**:
- understand the concept of Climate Services and engineering aspects of risk assessment,
- learn about a more technical approach towards cost-benefit analysis,
- know how to identify potential entry points of climate change adaptation within infrastructure planning frameworks and cycles using the Climate Proofing method, and
- be able to provide feedback to policy development and integrate the results of climate proofing infrastructure investment into the context of NAP/ NDC- implementation, institutional reform and other enabling mechanisms for change.
- become aware of challenges and enabling factors for the effective use of Climate Services in the context of Climate Proofing infrastructure investment;
- learn to think in systems and understand in this context the importance of climate value chains and Climate Service products for climate change adaptation which involves the technical, organizational and institutional levels;
- become aware how to balance interests of different stakeholder groups;
- be able to reflect on applying Climate Proofing infrastructure investment projects, strategies and plans in their own specific contexts.

Human Capacity Development is driven by individual interests which finally contribute to change processes at organizational and institutional level. Professionals who have the mandate to participate actively in these processes are most likely to become effective players if they are motivated, well informed and capable to face new challenges even under conditions of uncertainty.

Besides, trainees will further develop their personal capacities, namely:

- enhance analytical skills;
- learn to think strategically;
- strengthen cooperation and dialogue skills;
- learn to communicate in an audience-oriented and culture-sensitive way; and
- enhance reflective skills such as creativity, innovation and adaptive management skills.

1.2.2 Target Audience

The **target groups** of this training are primarily professionals responsible for the planning and management of (public) infrastructure investment. Considering the interaction of public infrastructure investment with other sectors like environment, nature, health, economically productive sectors, finance etc., besides infrastructure operators, national ministries, local governments or research entities, stakeholder groups from cross-sectorial planning and management bodies should be considered. Thus, the training aims at decision makers, planners, practitioners and technical staff from governments as well as civil society, academia, the private sector, investors, national and international staff in international or regional cooperation.

Trainers in partner countries receive tailor made Trainings of Trainers (ToT) to become able to design and implement CSI Trainings with support of the recommended methods, tools and materials.

1.2.3 Overview of methods and tools

The training mainly applies the didactic approach of participatory action learning. This implies that trainees assume responsibilities for the development of their training, learn from their own and other participants' experiences developed during the training and construct new skills and knowledge reflecting their new ex-

periences against their previous capacities. The trainers turn into learning process facilitators who introduce into new subjects and methods, while they might seek support from expert presentations, training materials including all information available through internet research. A combination of didactic methods allows to learn with strong emotions which favors the adoption of lessons learnt.

The core approach of the training is working on a specific case with guiding questions. These allow to explore the case systematically, discuss ideas with peer expert groups, present and reflect on the findings as compared to their real working environment, thus, learn about the potential and challenges of the methodological approach. This handbook works with the fictitious case of Metropolis City and the Millennium Bridge Project, a case deduced from real-life conditions and challenges, but simplified for the training context. The fictitious case allows trainees to dig into the matter without direct interests and concerns from their own work context. Nevertheless, the methodology can be applied to a real case, yet this involves further preparation in advance of the training in order to gather and process necessary information according to the fictitious example.

All steps of exploring the case study follow the same sequence:

1. The introduction, given by the trainer, provides the necessary theoretical background and introduces trainees to the casework.
2. The casework gives trainees the opportunity to work through the different aspects linked to Climate Proofing Infrastructure Investment in a systematic manner. Trainees assume the roles of 'case work experts' in charge of the specific module's task.
3. The 'case work experts' present their results to the plenary. This is an opportunity to share experiences

and to foster mutual learning. Trainers offer alternatives and remarks when necessary.

4. In a final reflection, the trainees reassume their own real-life position. They reflect on their experiences and link them to their own work in order to make the newly gained knowledge more applicable. Trainers support through guiding questions.

The training is part of a longer-term advisory process aiming at enhancing Climate Services for sustainable infrastructure investment. Based on a stocktaking capacity needs assessment among decision makers and participants, the training program may be tailored to the expressed needs. Each module can even be used independently for a specific training context depending on the focus of the capacity development event. In this regard, the training most likely is not perceived as a single event, but may consist of several training and advisory workshops from awareness raising to understanding the full methodological approach of enhancing Climate Services for sustainable climate proofing of (public) infrastructure investment.

The following training material is available:

- Trainee Handbook (including introduction to each topic, exercises and further resources),
- Trainer Handbook (including guidance on how to run the exercises and interactive dynamics),
- Presentations (providing technical background knowledge & real-life examples).

This present Trainee Handbook is a source for participants before, during and after the training. Although it could be used as a stand-alone publication and will always benefit from further instructions and explanations by the trainers and the complementary presentations.

1.2.4 Requirements for certification

Trainees receive a certificate for participation in the training if they fulfilled the following requirements:

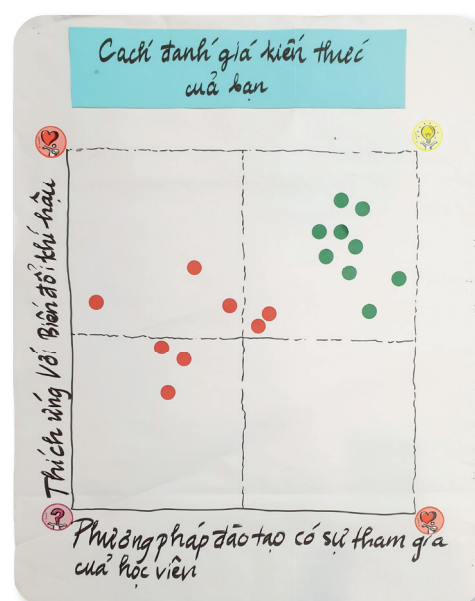
- Participate in all training classes,

- Assume a task of the Training Co-management Committee: i.e. trainees support the trainer team with time management, feedback including recollection of feedback from peers, documentation of the daily training development and other tasks to be agreed upon at the beginning of the training,
- Present at least once results of a group or individual task,
- Contribute with own ideas to discussions in plenary,
- ToT only: prepare and implement a training session using the training handbooks and materials.

The certificate specifies the modules received during the training and the specific skills and knowledge achieved either as practitioner or trainer.

The Knowledge Barometer is a tool which helps to illustrate the knowledge baseline at the beginning of the training and the changes perceived by participants at the end of the training (see Figure 1.2.1).

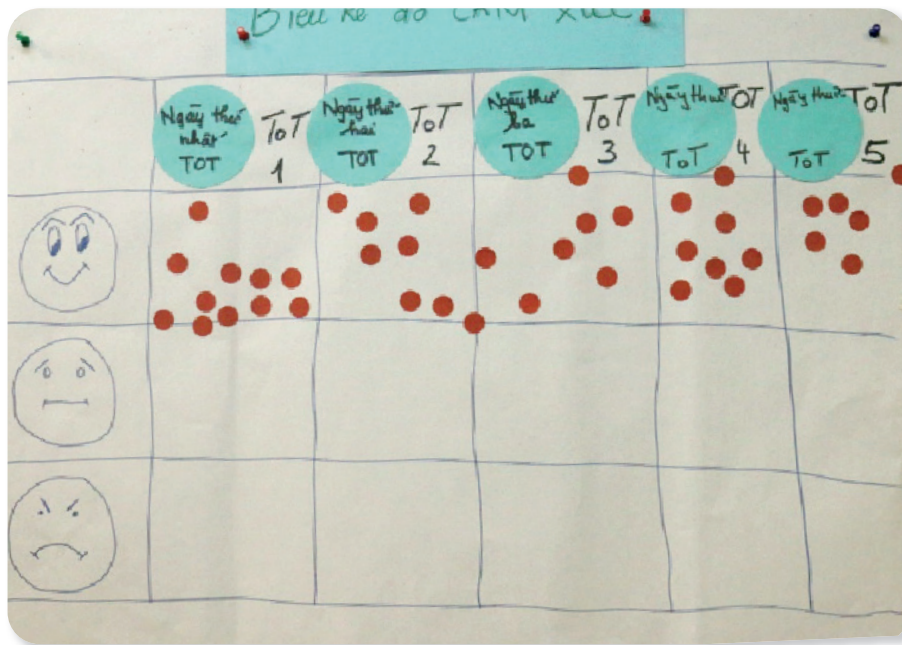
Figure 1.2.1 Knowledge barometer. The red dots were placed at the beginning, the green dots at the end of the training. The X and Y axes symbolize the knowledge level related to two different topics



1.2.5 Evaluation of training

The evaluation of the training is an important tool for feedback and adjustment of the training during and after the events:

Figure 1.2.2 The Mood Barometer



The Mood Barometer reflects the daily mood at the end of each day responding to the question: Which is my level of satisfaction with the training today?

Fully satisfied and eager to return tomorrow



Good day but still can be better tomorrow



I don't want to come back tomorrow



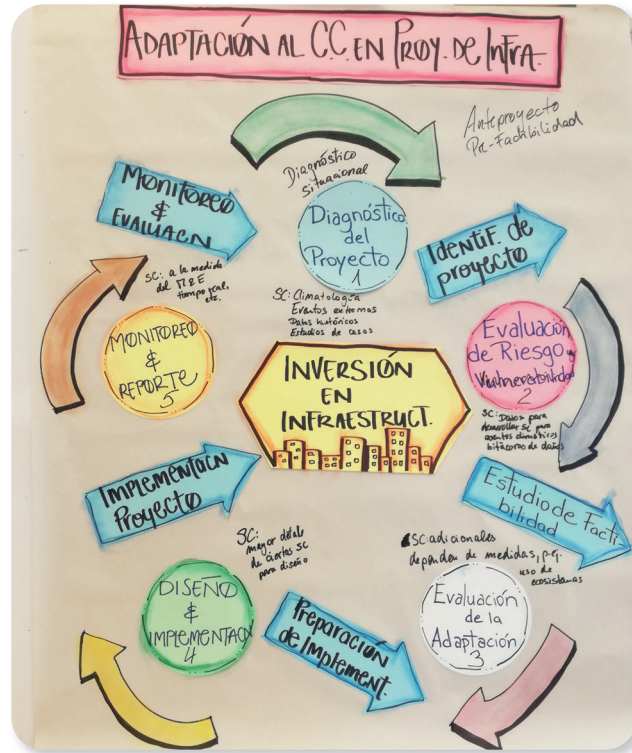
This tool provides a general impression of the day and together with the feedback from participants it helps to adjust the training development right in time and as far as feasible (see Figure 1.2.2). Strong emotions are expressively wanted as part of the learning process, therefore, high satisfaction and frustration might be part of the individual process and occur at the same time, particularly in more heterogeneous trainee groups.

At the end of the training, a qualitative evaluation form with additional space for free observations and recom-

mendations is the minimum tool which should be used to invite trainees to express their level of satisfaction with a number of criteria: e.g. achievement of training objectives, selection of contents, methods, materials, exchange with trainers, exchange with peer trainees, organization of the event, training venue, food (see photo x). Generally, GIZ applies a standard questionnaire at the end of the training and /or x months after completion of the training which asks for more details and seeks to measure the use of the acquired skills and knowledge evaluating the effect of the training.

1.3 Overview on CSI training sessions

Figure 1.3.1 Board introducing 'Climate Proofing'



The course is designed for duration of up to five days. Due to its modular structure it can be ‘tailored’ to the specific learning needs of the target audience. The training course comprises several training elements: case work group exercises, theoretical inputs and several interactive learning sessions. The training course consists of four modules divided into 10 sub-modules and main exercises:



- Module 1: Introduction to the CSI Training.



- Module 2: The importance of climate change for infrastructure investments:
 - Sub-Module 2.1: Introduction to Climate Change.
 - Sub-Module 2.2: Climate Change and Public Infrastructure Investment.



- Module 3: The role of Climate Services in infrastructure planning:
 - Sub-Module 3.1: Adaptation Assessment and the Role of Climate Services.



- Sub-Module 3.2: Demand driven Climate Services for resilient public infrastructure investments.

Module 4: Climate Proofing for sustainable infrastructure investments:

- Sub-Module 4.1: How to get started
- Sub-Module 4.2: Project Screening and Scoping.
- Sub-Module 4.3: Climate risk assessment and the role of Climate Services.
- Sub-Module 4.4: Adaptation Assessment and the role of Climate Services.
- Sub-Module 4.5: Project Design and Implementation.
- Sub-Module 4.6: Monitoring and reporting on a climate resilient infrastructure project.

following

The table below gives an overview of the exercises and their respective objectives, the approach for each sub-module and related steps, the time needed, presentations (PPT), external inputs and group work.

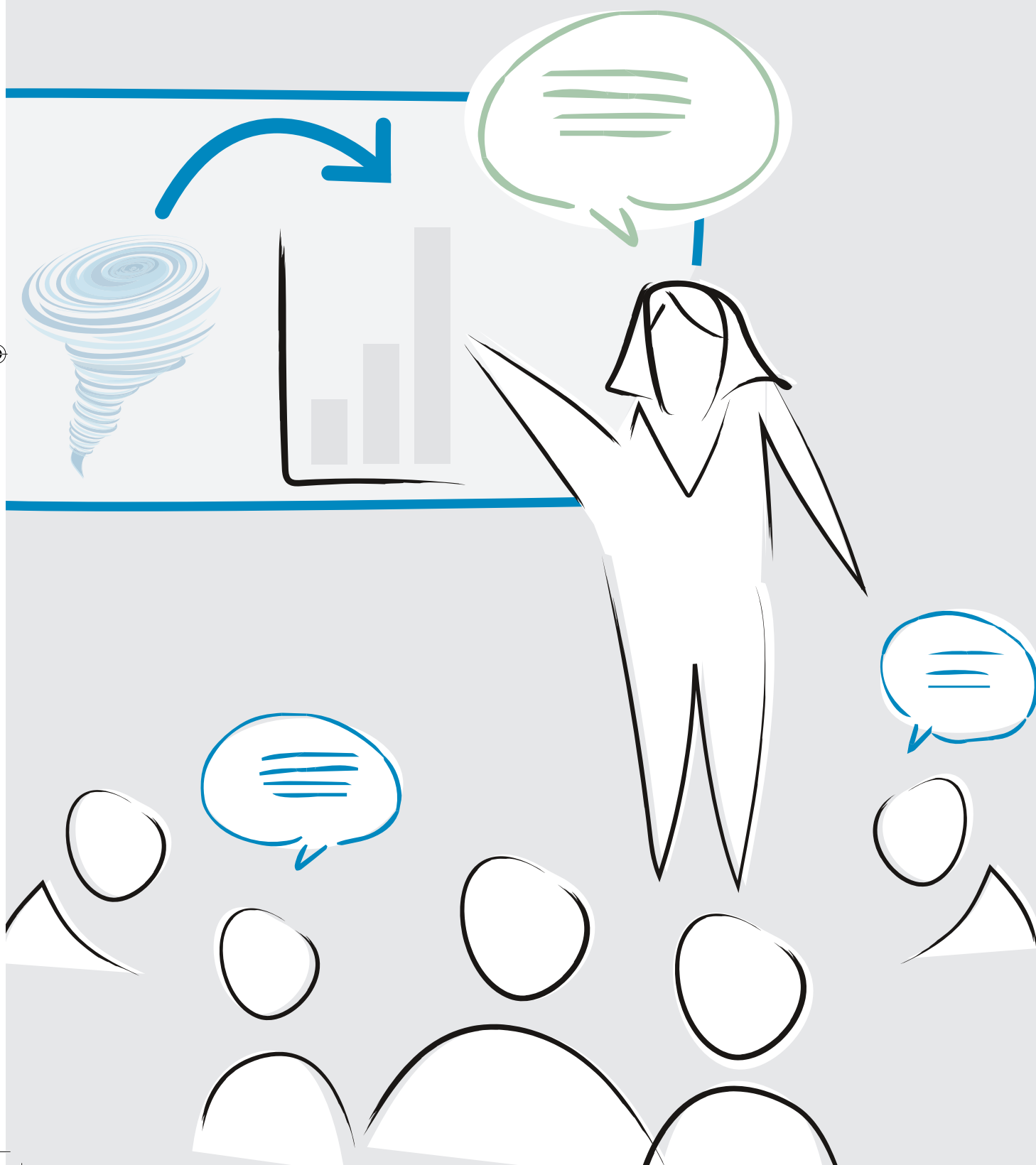
N°	Exercise	Learning Objectives	Available material	Method	Time (min)
Module 1	1	Introduction to the CSI training		Presentation Flip Chart and Panel	80
Module 2	2.1	Introduction to Climate Change	PPT; panel	Case work	140
	2.2	Climate Change and Public Infrastructure Investment	PPT; panel	Case work; action learning	150-240
Module 3	3.1	Adaptation Assessment and the Role of Climate Services	PPT; panel	Case work	240
	3.2	Demand driven Climate Services for resilient public infrastructure investments	PPT	Role play	170-180
Module 4	4.1	How to get started	PPT; panel	Case work	90

N°	Session	Learning Objectives	Available material	Method	Time (min)
4.1	Scoping and screening	<ul style="list-style-type: none"> ▶ The participant is able to identify entry-points for climate change adaptation into the infrastructure project cycle. ▶ The participant is able to frame the context and objectives of climate proofing according to the selected entry point in the infrastructure investment cycle. ▶ The participant is able to identify non-climate factors which interact with climate effects. ▶ The participant is able to identify and appoint key stakeholders and their roles, tasks and interaction within the project. 	PPT; panel	Case work	135-150
4.2	Climate risk assessment and the role of Climate Services	<ul style="list-style-type: none"> ▶ The trainee understands the terminology and concept of Climate Risk Assessment for infrastructure projects as a Climate Service product following the PIEVC Engineering Protocol. ▶ The trainee is able to identify needs for the development of climate services products. ▶ The trainee is able to apply the experiences from the exercise to other infrastructure projects. 	PPT; panel	Case work	270-350
4.3	Adaptation Assessment and the role of Climate Services	<ul style="list-style-type: none"> ▶ The trainee understands the concept of Adaptation Assessment for infrastructure projects. ▶ The trainee is able to identify and cluster adaptation options. ▶ The trainee understands the difference among tools available for prioritization of options. ▶ The trainee understands the role of Climate Service Products as an adaptation option. 	PPT; panel	Case work	160-240
4.4	Project Design and Implementation	<ul style="list-style-type: none"> ▶ The trainee understands why climate proofing does not end with the identification or rejection of adaptation measures, but the integration of these into the project design and operation plan for implementation. ▶ The trainee is able to define the roles of key stakeholder groups for successful implementation of the climate proofed project. ▶ The trainee is aware of complementary capacity development measures which facilitate the implementation of the project and coordination among key stakeholders. 	PPT; panel	Case work	160
4.5	Monitoring and reporting on a climate resilient infrastructure project	<ul style="list-style-type: none"> ▶ The trainee is aware of the importance and challenges of monitoring adaptation measures of infrastructure investments. ▶ The trainee understands how to identify indicators for monitoring and provide recommendations for transparent reporting. ▶ The trainee is able to identify a monitoring framework for public infrastructure investments. 	PPT; panel	Case work	210
4.5	Monitoring and reporting on a climate resilient infrastructure project	<ul style="list-style-type: none"> ▶ The trainee is aware of the importance and challenges of monitoring adaptation measures of infrastructure investments. ▶ The trainee understands how to identify indicators for monitoring and provide recommendations for transparent reporting. ▶ The trainee is able to identify a monitoring framework for public infrastructure investments. 	PPT; panel	Case work	210

The following pages introduce every exercise including a suggestion on the time that should be allocated as well as recommendations for running the sessions and for reflecting on the presented results. Further you will find exemplary results that you can use as a backup resource for your preparation, as well as hints for plenary discussion and key take away messages.

2 Basic facilitation skills¹

¹ Adapted from: Heine, B. 2018. Blue Solutions Trainings. Trainer Manual. GIZ, Eschborn and Bonn, pp 12-46.



2.1 Neuroscience and learning



'You cannot teach a man anything, you can only help him find it within himself.'

Galileo Galilei

This section briefly elaborates on major insights from neuroscience on learning. We neither attempt to provide a full account on neuroscience and learning nor present an overview on how the brain works. Yet, we will highlight some scientific facts that support the didactical approach of the CSI Trainings and can also help you as a trainer to defend and explain what you may find right in terms of methodology and concept with plausible arguments:²

Our brain is social

Learning is much more effective if it is embedded in a social context. We are especially motivated if we can act together with people we interpersonally connect with.

Enabling factors for learning: Take enough time for getting to know each other, use a lot of group work formats and reflect on participants own work context as much as possible.

We need to make sense of learning

Our brain creates sense and meaning and can only process what connects to existing knowledge, experience and active neuronal networks.

Enabling factors for learning: Participants need to know why they participate and what is the purpose of their participation beyond the actual training workshop in their daily routine.

Our brain creates sense by creating neuronal patterns

We memorize new knowledge and experience if it is connected to existing knowledge and experience patterns.

Support factors for learning: Acknowledge and appreciate exiting knowledge and experience of participants by involving them in the explanation of concepts and contents as much as possible. Refrain from lecturing content without prior asking participants what they know about the topic themselves.

Emotions are important for learning

Heightened emotional excitation causes and increases neuroplasticity that enables long-term learning. This means, participants must be able to sense themselves what problems, challenges and needs they can solve or reduce by a applying a particular method or change process or what needs, wishes and desires they can satisfy by applying a particular method or change process.

Enabling factors for learning: Create a learning environment that enables participants to come into contact with their emotions such as individual reflection, walks outside or dream journeys.

Our brain processes information as parts and as a whole at the same time

We better remember content if we understand the connection between details and the whole.

Enabling factors for learning: Alter between levels of abstraction, i.e. between detail and overview and create links to existing knowledge and experience.

We learn by focused attention and peripheral perception

Learning is influenced by a lot of unconscious processes. Not only what I say as a trainer is important but also how I say it. Also, the learning environment influences learning.

Enabling factors for learning: Apply a lot of visuals and posters, use positive affirmations and aim for meeting rooms with a pleasant atmosphere.

² Sources and further information: Gerald Hüther (2006) and Franz Hütter & Sandra Mareike Lang (2017). Also see: David Eagleman (2016).

We have at least two kinds of memory

Learning is more successful if we store insights and experience in different brain areas and connect them with each other, for example in the visual, auditory sensorimotor, gustatory and olfactory cortex. The more senses are involved, the better we learn.

Enabling factors for learning: Apply formats that convey abstract content in physically perceptible ways such as games and energizer with a systemic background.

Challenges support complex learning, fear and threat do not

We learn best if we are free of constraints and fear and challenged in a positive and motivating way. All physical structures we need for learning are highly sensitive to stress, fear and anger. While 'playing' we use our fears and strengthen our neuronal network that we need to solve specific challenges. If we play, we open up to a world in which everything disappears that keeps us from truly discovering and unfolding our full potential. If we play we feel no pressure, no constraint – thus fear disappears and we feel full of relish and free.

Enabling factors for learning: Work with the case method that allows participants to step out of their usual context and play.

Also remember, trust stimulates motivation and reduces stress: Do not present yourself as being an expert without fail, but being humble in the sense of being open, interested and curious. It may help to not only talk about your personal success stories but also failures and disappointments.

We usually develop ideas in periods of relaxation

Creativity, spontaneous inspiration, intuitive recognition and innovative problem solving are all linked by many studies to the so-called 'Default Mode Network', a network of multiple nerve networks that are located in different brain areas being far apart from each other. This network becomes active when we relax, for instance while daydreaming. This means we need breaks from work, so that areas of our brain can be linked that usually are not linked in our daily routine.

Support factors for learning: Include enough breaks for relaxation and formats such as games or walks outside with learning partners.

Learning is a slow process

Learning takes place through the neuronal networking in our brain. Genetically, we have the possibility to develop and stabilise specific patterns of behaviour or not. By this, we turn initial trails into paved roads and highways until they become like the 'German Autobahn', where we can drive high speed, but cannot drive off very easily again. During the short duration of a training workshop we can only trigger effective neuroplastic change processes in our brains. The real change in thinking and action takes place only by constant repetition in daily routine.

Support factors for learning: Include enough breaks for relaxation or relaxing energizers. Assign enough time for exercises and rather concentrate on a few, but intensive contents. Include enough reflection and transfer sessions.

2.2 How adults learn

Part of being an effective trainer involves understanding how adults learn best. Compared to children and teens, adults have special needs and requirements as learners.

Adults already know a lot. Adults have accumulated a foundation of life experiences and knowledge that may include work-related activities, family responsibilities, and previous education and training. They need to be able to integrate new ideas with what they already know if they are going to keep – and use – the new information. The trainer's job is to mobilize the participants' knowledge first, before they add new information to it, and to provide opportunities to discuss and reflect new knowledge and to adapt it to individual circumstances.

As do all learners, **adults need to be shown respect.** Trainers must acknowledge the wealth of experiences that adult participants bring to the training. These adults should be treated as equals in experience and knowledge and allowed to voice their opinions freely in the group.

Adults are autonomous and self-directed. They need to be free to direct themselves. Trainers have to be sure to act as facilitators, guiding participants to their own knowledge rather than supplying them with facts. They serve as facilitators for the participants' own learning process and must actively involve and reflect their interests in the design of training. They should allow participants to assume responsibility for presentations and group leadership.

Adults are goal-oriented. Upon enrolling in training, they usually know what goal they want to attain. They therefore appreciate an educational programme that is well organised and has clearly defined elements. Trainers must show participants how a training will help them attain their goals. This classification of goals and course objectives must be done early in the training.

Adults are relevancy-oriented. They must see a reason for learning something. Learning has to be applicable to their work or other responsibilities to be of value to them. They may not be interested in knowledge for its own sake. Therefore, trainers need a sound understanding of the participants' motivation and needs and must continuously try to harmonize content and design of training with the life and work context of the participants. They should make participants think about the practical application of the newly acquired knowledge at his/her work place: Possible benefits, preconditions, difficulties, resistances and how to deal with them.

Adult learning mostly refers to behaviour changes – to be able to do something better or differently than before. This requires action-oriented training methods combined with intensive feedback by the trainer or the other participants.

Adults remember only 10 % of what they read (e.g. in newspapers, in power point slides – if information is not presented in a spoken manner as well). They remember twice as much of what they hear, but still only 20 % of it. Half of the things that are said and shown will be remembered. That is one reason why trainers should talk about the issues and visualize or show them at the same time as much as possible. Also interesting for trainers is that adults remember 70 % of what they say themselves: for example, ask participants to turn to their neighbour after a lecture and let them talk about what they remember and they will absorb a much higher percentage of the newly presented information!

Finally, **adults remember best what they say and do!** As a consequence, instead of giving a lecture about ecosystem services and how to integrate them into development planning, let participants work in groups, let them talk about the issue themselves, and let them recognise, demonstrate and capture the value of ecosystem services with the help of a fictitious case or, if possible, let them work with and plan their own cases and projects. Speaking, hearing, and seeing should be complemented and enhanced by doing.

Figure 2.2.1 How we learn best





2.3 Key competencies for trainers

We believe the most important competence for trainers is: be yourself! Authenticity, empathy, intuition and mindfulness lead a long way in successfully facilitating a learning process. Being aware about your own assumptions on learning also is a major asset in facilitating learning processes. Here is what we believe in:

- The knowledge is always already within the system (adults already know a lot);
- Knowledge alone does not provoke change. Therefore learning should encompass skills, attitudes and awareness as well; and
- Everyone always does his/her best. We are all different individuals that behave, learn and communicate in different ways.

Therefore we regard trainers rather as ‘facilitators of learning processes’ as opposed to experts imparting as much expertise as possible. We believe as long as experienced infrastructure investment planners and practitioners accompany a training workshop as experts, the trainers should have a solid understanding of the training topic, but do not necessarily have to be master experts in the topic. At the same time, we advise that one of the trainers in the team has a strong background and competencies and facilitating learning. The success of a training course greatly depends on good facilitation, which is both a skilful craft and a creative art. Good facilitators bring a group together, develop and balance its potentials in a non-dominating way. They are knowledgeable about the issues at stake without showing this off. Asking and formulating the right question at the right time and active listening are two of their most important tasks.

Important skills and qualities of CSI trainers are summarized below:

Process-orientation

Process-orientation requires that trainers start from the existing knowledge and experiences of the participants and understand that a learning process does not start from scratch. It also means providing a relaxed and friendly atmosphere and opportunities for participants to proactively take the learning process in their own hands as much as possible. This requires trainers to trust in other people’s intellectual and creative po-

tential, to avoid that there are winners and losers in a group, and to respect the ideas, opinions and practices of others.

Acting in a process-oriented manner also requires a trainer to come with a flexible design of the training process and not a ready-to-implement detailed action plan. The trainer needs to be an excellent observer of the dynamics of the learning process and of group dynamics in order to flexibly steer the training process. This includes setting an appropriate level of difficulty and complexity, high enough to challenge participants but not to frustrate them. The instructions should predict and reward participation, culminating in success.

Communication

Trainers need to be good and effective communicators. It is important for them to be good listeners and questioners. Asking good questions is indispensable for enhancing reflection, but also for allowing participants to discover their own potentials.

Trainers should be able to make themselves understood, which implies adapting to a particular group of participants. In communicating properly, they will avoid jargon and will show what it means to convey a concise message or present specific content in a structured way.

They also need to be able to provide feedback that enhances learning and reflection.

Enhancing ownership and co-management

Trainers should be able to motivate participants to take an active role in the training process. They therefore need to be ready to ‘hand over the stick’, which means creating learning opportunities where the participants can practice new skills and abilities while the trainers provide guidance and feedback. In responding to the participants’ needs and expectations, the trainers will be serious in inviting participants to take more and more ownership of the training process itself. Creating a forum for co-management within a training workshop has proved to be very useful for developing ownership (see also p. 28). By displaying an attitude of



co-management, trainers make the offer of co-management credible and attractive.

Visualisation

We consider visualisation an indispensable element of a sound participatory learning process (see also p. 29). Trainers need to practice the art of visualisation, which means using it appropriately for inputs or presentations and to create opportunities for the participants to express themselves through visualisation. The manner by which trainers use visualisation should be exemplary; it should go together with effectively supporting participants to make ever-greater use of visualisation.

PowerPoint presentations can be used for theoretical inputs; they should be concise and well presented and get the essential message across without overstressing participants' intake capacity.

In the case of interactive communication, mobile visualisation (with the help of cards, markers, pin boards and flipcharts etc.) is more effective. Trainers need to combine both of these visualisation approaches and use PowerPoint presentations as an example of an effective support tool for learning and not as a means of maximising the information presented in a given time span.

Methodological variability

Trainers need a broad repertoire of training methods to create sound learning dynamics. They should employ these methods following a methodological reasoning, meaning that they can always explain why they have used a particular method at a particular point in the training workshop process.

Having a broad repertoire needs to go together with the trainer's ability to meaningfully combine these methods, as is reflected in a sound training workshop design = dramaturgy (see also chapter 5). Knowing how to use different methods is a good asset for a trainer, but what we see as equally important is his/her ability to adapt a method to the particularities of the group they are working with.

In a nutshell: We see the trainer less as a teacher or expert and more as a facilitator of a learning process. This fits very well with the trainer sharing his/ her knowledge and experiences (e.g. through inputs and presentations), but only as part of an interactive learning design and not in a way that places the trainer's knowledge and experience in the spotlight.

Figure 2.3.1 Brainstorming on trainer skills (Blue Training ToT Bali 2017)



2.4 The Harvard Case Method

2.4.1 Background

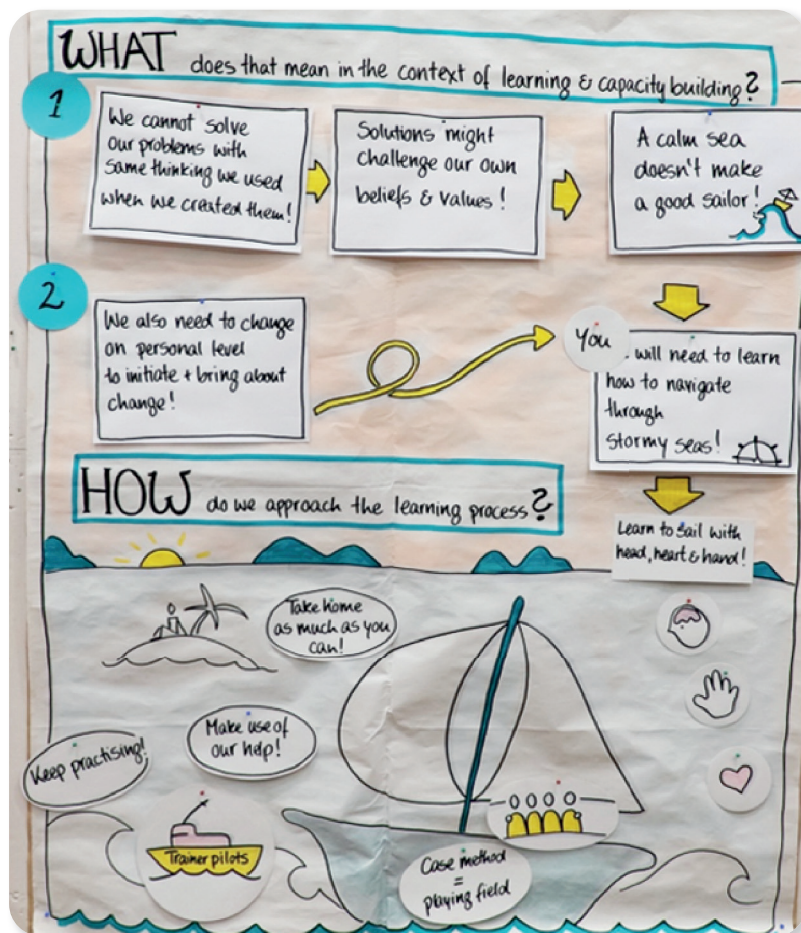
The CSI trainings are based on the Harvard Case Method, which mainly conveys teaching messages through interactive practical work by participants. All three training courses deal with the fictitious country of Bakul, a situation closely based on real life conditions and challenges.

The Harvard Case Method is a tried and tested approach for practice-oriented, interactive learning. It was developed in the context of Harvard Law School, where it is largely based on the intensive exploration and discussion of a particular case relevant to the teaching objectives. The Harvard Case Method stimulates the trainee's active exploration and development of conclusions, rather than providing ready-made teach-

ing messages. With this background, the Harvard Case Method is well suited for the development of practice-oriented knowledge as required by people who are actively involved in adaptation work. The case method enables learning by discovery and confirmation. It

- Allows participants to make mistakes with no other consequence than learning;
- Enables to learn about a complex system while interacting with others (exchange and mutual learning);
- Creates practical competencies (through learning by doing);
- Build on participants experience and backgrounds; and
- Is fun!

Figure 2.4.1 Didactical Approach of CSI Trainings



The Case Method has been adapted to the particular requirements of this training programme. This implies that, compared to the university teaching context, trainees play an even more active role, while the role of trainers will be less dominant. Trainees will, for example, explore the case study in a group work format and trainers assist their reflection with guiding questions, whereas in the university context the teacher guides his/her students through the case with the help of questions.

Ideally, a training course will be embedded in a longer-term advisory process aiming at supporting concrete planning and management efforts. Based on a stock-taking capacity needs assessment, training modules will be chosen and adapted to the particular case. In this regard, the training will most likely not be a single event, but consist of several training and advisory workshops. The training course might as well serve as a single-event introductory course aiming at informing and raising awareness among practitioners.

2.4.2 Guidance on using the Harvard Case Method

The Harvard Case Method requires intensive preparation prior to the training. All relevant training materi-

al for this training course has been developed as part of a long process, including test and pilot phases. The different training package items are well matched, therefore please be careful when changing single items.

The following guidance is very helpful to support the learning process:

- Most important: Be clear about what message you want to convey with the casework. Organise the entire casework in a way that this message comes through.
- Make yourself familiar with the expectations, needs and 'horizons' of the trainees. Conduct the casework in a way that you are 'meeting' the trainees where they stand.
- Reflect the practical experiences and the type of work that the trainees are exposed to in their day-to-day work.
- Do not attach complex data if the trainees are usually not confronted with such information, but are involved in more operational work. You may provide larger amounts of information if the trainees are used to screening comprehensive sources for relevant information.
- Restrict yourself to the information that is relevant for the case. The casework should stimulate discussion and active examination of the subject.

The five golden rules for a case facilitator

Rule 1

Do not 'explain' the message of the case directly. Let the trainees find the conclusions themselves. Guide them through questions.

Rule 2

Provide enough time for the wrap-up phase and let participants discuss intensively key messages and conclusions.

Rule 3

Be precise with your instructions for the case work. The trainees should start the case work

with a clear vision on the objective of the task and of what they have to do.

Rule 4

Limit presentations. Do not talk for more than 15 minutes (except the introductory lecture). If necessary, split lectures into several shorter inputs.

Rule 5

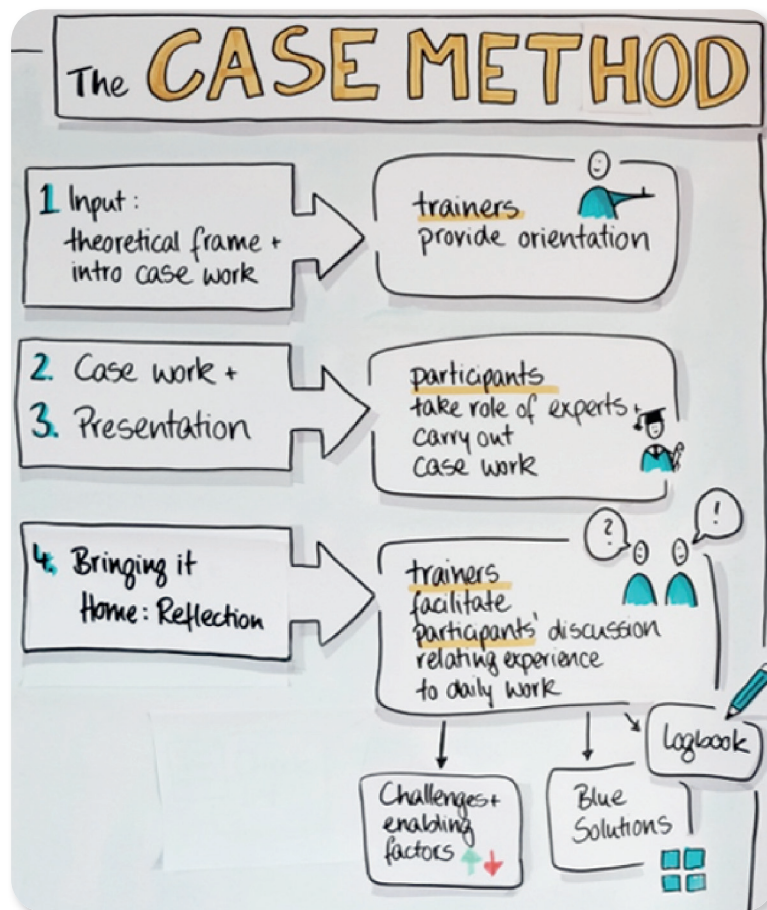
Always invite the trainees to reflect on how the lessons learnt relate to their day-to-day work or how far applied approaches should be adjusted to it.

2.4.3 Casework sequence

All exercises of all three training courses follow the same sequence:

1. The **introduction**, given by the trainer, provides the necessary theoretical background and introduces participants to the casework. After the introduction, the groups should be able to conduct the casework independently. You find the task description in each Participant Handbook. At best, you copy the objective, context and task on a flipchart that can stay visible during the case work and helps participants to grasp the task better.
2. The **casework** gives participants the opportunity to work through the different aspects linked to climate change, Climate Services, and climate proofing in a systematic manner. Participants assume the roles of ‘case work experts’ in charge of the specific module’s task. The groups work independently while trainers should remain close by and be prepared to offer support and guidance if needed.
3. The ‘case work experts’ **present** their results to the plenary. This is an opportunity to share experiences and to foster mutual learning. It is important that this step is introduced as a chance to share experiences and a chance for mutual learning and not a ‘test’. Trainers should be appreciative of the work done and give feedback on the results; they should only offer alternatives and amendments if necessary.
4. In a final **reflection**, the participants reassume their own real-life position. They reflect on their experiences and link them to their own work in order to make the newly gained knowledge more applicable. Trainers support through guiding questions.

Figure 2.4.2 Flipchart case method





2.4.4 Fictitious or real case?

The particular value of having a fictitious case study is that everybody can relate easily and everybody has the same knowledge. Metropolis has most of the relevant features needed in order to simulate the whole process from recognizing, demonstrating and capturing the value of ecosystem services for development and integrating them into development planning.

One could argue that real-world cases would be better as they are taken directly from reality. The tricky thing, however, is that there are no 'neutral cases' and partici-

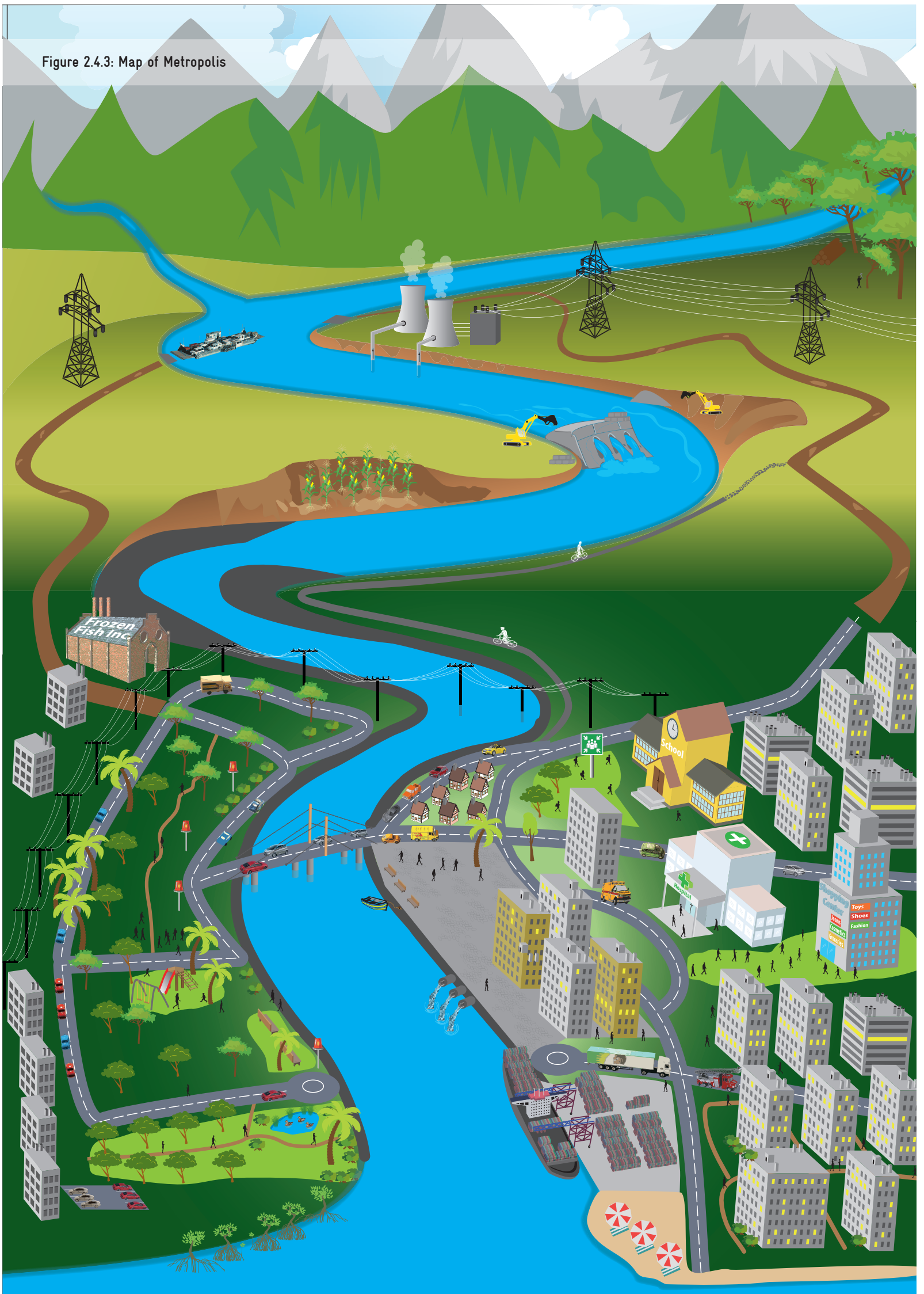
pants may be biased or hampered in one way or another by learning in this manner. Real cases may also provoke unproductive discussions about the reliability of data being used.

Furthermore, it is important to make clear that even in a real case, we would never have all the information we would like to have, and dealing with logically drawn assumptions is part of adaptive planning.

In case you opt to work with real cases from participants you will find a 'casework framework' in the annex.



Figure 2.4.3: Map of Metropolis



2.5 Participatory training methods

2.5.1 Hints for interactive trainings

Be very well prepared

A participatory training workshop puts a high demand on the facilitating trainer(s), who have to lead the narrative, be adaptive to changes and responsive to trainees' needs and requests. They have to be on top of the training, without showing a 'top-down' attitude. Good preparation of training venue and material, PowerPoint presentations and flip charts, and a solid understanding of the exercises including the following discussions are essential to providing a training experience rewarding for both trainers and trainees. Make sure you arrive well before the training and have logistical support on the ground in case it happens away from your workstation. Familiarise yourself with all content of the training well before you arrive, and ideally together with your co-trainer.

Create a good workshop flow through proper sequencing

A good mix of methods needs a dramaturgic sense in order to find the appropriate combination of methods for a particular group. Putting the different methods in a proper sequence demonstrates the ability of a trainer to create a good flow for the training workshop process. This means, for example, having a phase of intensive group work followed by a plenary session capitalising on the group work, yet still demanding active participation, but not to the same extent as before. A good flow = a good dramaturgy also means mixing intellectual (cognitive), emotional and physical impulses. Overdoing intellectual impulses, e.g. through a sequence of eventually overloaded PowerPoint presentations, will definitely do harm to the participatory workshop process.

Watch out for group dynamics

Not everybody feels comfortable with participatory processes. Workshop participants may come from an organisational culture where participatory dynamics are avoided rather than embraced. A potentially participatory process in a working group can be distorted when a dominant person imposes a leadership style. How to

intervene in such a situation depends on the trainer's judgment. It is often good to stimulate the self-regulating abilities of groups, but there are moments where direct intervention from the trainer is required.

Hand over the stick

There are often moments in a training workshop when it is important for a participatory trainer to refrain from what he/she could probably do best. After a brainstorming session the participants therefore could pin the cards, not the trainer. The participants could do the clustering with only some guidance from the trainer provided they have already gained some experience in doing it. Subject matter or methodological questions directed at the trainer can be passed on to the plenary or possibly a resource person.

It depends on the trainer's assessment of the right moment to hand over the stick. Confronting participants with an exercise where they have apparently too little experience to do that exercise will have a discouraging and not a positive learning effect. However, inviting participants to take responsibility for the workshop process creates trust and self-confidence. The same applies if the participants call on you to solve a problem. You may want to refer to the rule of thumb: 'If somebody has a problem he/she should take the responsibility to solve it'.

Identify an appropriate workshop set-up to suit the participatory methods

A classroom set-up for a training workshop is contradictory to a participatory design. Participants will focus their attention to what the trainer is doing rather than trying to interact with other participants. Any participatory intentions coming from the trainer will thus not be credible. Therefore settings favouring interactions, like table groups for example, or ideally a half circle where everybody can see his/her fellow trainees, are a must for any participatory training workshop. It is also important to have enough space to move around, to come together for energisers or for an information market. And working groups also need a proper working space in separate rooms.

Work in a team of trainers

If possible, work in a team of trainers. Trainers have different personal characteristics, which are perceived, accepted and appreciated differently by participants. Being a trainer is very demanding and intensive. It requires phases of rest and reflection. While one trainer guides the group process, the other may reflect on the program details or the group dynamics and prepare the next step. And, trainers need feedback on performance and reactions of participants and themselves. Often, new materials are needed, cards have to be distributed or collected, a dialogue needs to be visualized or several working groups to be supervised. If you cannot have a co-trainer, insist on having at least an event assistant who supports you throughout the entire training.

Be playful

Creating a social environment conducive to learning is an important ingredient for a successful training, and having fun can support that (depending on the cultural background). Opening the training with an exercise in which participants position themselves in a room, e.g. according to their home country, field of education or level of knowledge on the training topic provides for a first opportunity for people to get to know another. Consider opening the afternoon sessions with a game. Also, when you are taking a role during a session in the training, fill that with life, e.g. using an accessory to your clothes, giving yourself a funny name etc.

Figure 2.5.1 Playing 'circle of chairs' in BPiP training in Myanmar (November 2017)



2.5.2 Powerful questions: key to unlocking new doors³

The usefulness of the knowledge we acquire and the effectiveness of the actions we take depend on the quality of the questions we ask. Questions open the door to dialogue and discovery. They are an invitation to creativity and breakthrough thinking.

'If I had an hour to solve a problem and my life depended on the solution, I would spend the first 55 minutes determining the proper question to ask, for once I know the proper question, I could solve the problem in less than five minutes.'

Albert Einstein

Thus, asking powerful questions is a key skill for facilitation learning processes. During training, new steps in the group learning process should be opened by asking a carefully formulated and visualised question. It is useful to pre-test the question and potential answers once amongst the trainer team itself.

What makes a question powerful?

Vogt et al. (2003) present a wonderfully evocative description, of Fran Peavey:

'Questions can be like a lever you use to pry open the stuck lid on a paint can. [...] If we have a short lever, we can only just crack open the lid on the can. But if we have a longer lever, or a more dynamic question, we can open that can up much wider and really stir things up. [...] If the right question is applied, and it digs deep enough, then we can stir up all the creative solutions.'

While you may not immediately know the characteristics of a powerful question, it's actually quite easy to recognize one. For instance, if you were an Olympic judge scoring the power of questions on a scale from one to ten (with ten being the highest), how would you rate the following queries?

1. What time is it?
2. Did you take a shower?
3. What possibilities exist that we haven't thought of yet?
4. What does it mean to be ethical?

Vogt et al. (2003) have tested questions such as these in several different cultures. In the process, they have discovered that, despite cultural differences, people quite consistently rate questions one and two as being less powerful, and questions three and four as being more powerful. Clearly, powerful questions are ones that transcend many boundaries.

In a nutshell, powerful questions:

- Generate curiosity in the listener
- Stimulate reflective conversation
- Are thought-provoking
- Surface underlying assumptions
- Invite creativity and new possibilities
- Generate energy and forward movement
- Channel attention and focuses inquiry
- Stay with participants
- Touches a deep meaning
- Evokes more questions

The architecture of powerful questions

Understanding the basic architecture of formulating powerful questions is a key facilitation skill. There are three dimensions to powerful questions: construction, scope, and assumptions.

³ Most of this text has been adapted from Vogt, Eric E., Juanita Brown & David Isaacs (2003).

The first dimension: the construction of a question

The linguistic construction of a question can make a critical difference in either opening our minds or narrowing the possibilities we can consider. Is it a yes/no question? Is it an either/or question? Does it begin with an interrogative, such as Who, What or How?

WHO WHAT
WHEN WHERE WHICH
WHY HOW?

Just for fun, try placing these words in a pyramid of lower to higher power. Don't think too much; use your intuition.

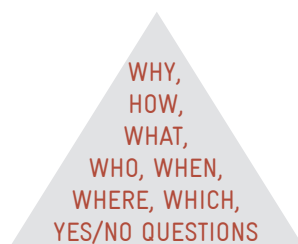
More Powerful



Less Powerful

When asked by Vogt et. al. (2003), most people rank these word from more powerful to less powerful as follows:

More Powerful



Less Powerful

By using the words towards the top of the pyramid, we can make many of our questions more robust.

For example, consider the following sequence:

- Are you satisfied with the process of considering climate change in infrastructure investment in your country?
- When have you ben most satisfied with the process of considering climate change in infrastructure investment in your country?
- What is it about the process of considering climate change in infrastructure investment in your country that you find most satisfying?
- Why might it be that the process of considering climate change infrastructure investment in your country has had its ups and downs?

As you move from the simple "yes/no" question at the beginning towards the "why" question at the end, you'll notice that the queries tend to stimulate more reflective thinking and a deeper level of conversation.

However, unless a "why" question is carefully crafted, it can easily evoke a defensive response, as people try to justify their answer rather than proceed in a spirit of inquiry. For instance, three questions, "Why can't you ever tell me exactly what you are thinking?" or "Why did you do it that way?" can cause someone to defend a given position or rationalise some past decision, rather than open new possibilities.

Just because a question is situated near the top of the pyramid does not necessarily mean that it is more important or more relevant than its counterparts at the bottom. Depending on your goals, a "yes/no" question can be extremely important.

The second dimension: the scope of a question

As you work to make your questions powerful, tailor and clarify the scope as precisely as possible to keep them within the realistic boundaries and needs of the situation you are working with. Avoid stretching the scope of your question too far. For example, 'How can we best manage the ocean?' is extremely interesting, but clearly outside the scope of most participants' capacity to take effective action, at least in the short term.

The third dimension: the assumptions within questions

To formulate powerful questions, it's important to become aware of assumptions and use them appropriately. So, contrast the question, 'What did we do wrong and who is responsible?' with 'What can we learn from what has happened and what possibilities do we now see?' The first question assumes error and blame; it is a safe bet that whoever is responding will feel defensive. The second question encourages reflection and is much more likely than the first query to stimulate learning and collaboration among those involved.

By **understanding and consciously considering the three dimensions** of powerful questions, we can increase the power of the questions we ask and, as a result, increase our ability to generate insights that help shape the future. As with any new skill, the best teacher is experience, and the best coach is a thoughtful listener. We encourage you to experiment with increasing the power of your questions and see what impact you have.

For example, in advance of an important meeting or conversation, spend a few minutes with a colleague

and write down several questions that are relevant to the topic. Rate them in terms of their power. Referring to the three dimensions outlined above, see if you can spot why certain questions are more compelling than others. Experiment with changing the construction and scope, to get a feel for how doing so changes the direction of the inquiry. Be sure to examine the assumptions that are embedded in your questions and check to see if they will help or hinder your exploration.

How can I frame better questions?

Here are some questions you might ask yourself to frame powerful questions:

- Is this question relevant to the real life and real work of the people who will be exploring it?
- Is this a genuine question—a question to which I/we really don't know the answer?
- What 'work' do I want this question to do? That is, what kind of conversation, meanings, and feelings do I imagine this question will evoke in those who will be exploring it?
- Is this question likely to invite fresh thinking/feeling? Is it familiar enough to be recognizable

and relevant – and different enough to call forward a new response?

- What assumptions or beliefs are embedded in the way this question is constructed?
- Is this question likely to generate hope, imagination, engagement, creative action, and new possibilities or is it likely to increase a focus on past problems and obstacles?
- Does this question leave room for new and different questions to be raised as the initial question is explored?

Source: Vogt, Eric E., Juanita Brown & David Isaacs (2003).

Above all the architectural consideration what matters as much as a good question is your own attitude. Paying attention to your own state of being and how you are talking and listening helps to become an authentic facilitator. Notice your own assumptions, reactions, contractions anxieties, prejudices and projections. To ask powerful question you need to be seriously open, interested and curious about the answer, what Edgar H. Schein calls ‘Humble Inquiry’ (2016).

Table 2.5.1 Questions for all sessions

Questions for all sessions*
<p>Questions for focusing collective attention on your situation:</p> <ul style="list-style-type: none"> ▶ What question, if answered, could make the most difference to the future of (your specific situation)? ▶ What’s important to you about (your specific situation) and why do you care? ▶ What draws you/us to this inquiry? ▶ What’s our intention here? What’s the deeper purpose (the big ‘why’) that is really worthy of our best effort? ▶ What opportunities can you see in (your specific situation)? ▶ What do we know so far/still need to learn about (your specific situation)? ▶ What are the dilemmas/opportunities in (your specific situation)? ▶ What assumptions do we need to test or challenge here in thinking about (your specific situation)? ▶ What would someone who had a very different set of beliefs than we do say about (your specific situation)?
<p>Questions for connecting ideas and finding deeper insight:</p> <ul style="list-style-type: none"> ▶ What’s taking shape? What are you hearing underneath the variety of opinions being expressed? ▶ What’s in the centre of the table? ▶ What’s emerging here for you? What new connections are you making? ▶ What had real meaning for you from what you’ve heard? What surprised you? What challenged you? What’s missing from this picture so far? What is it we’re not seeing? What do we need more clarity about? ▶ What’s been your/our major learning, insight, or discover so far? ▶ What’s the next level of thinking we need to do? ▶ If there was one thing that hasn’t yet been said in order to reach a deeper level of understanding/ clarity, what would that be?
<p>Questions that create forward movement:</p> <p>What would it take to create change on this issue?</p> <ul style="list-style-type: none"> ▶ What could happen that would enable you/us to feel fully engaged and energized about (your specific situation)? ▶ What’s possible here and who cares? (Rather than ‘What’s wrong here and who’s responsible?’) ▶ What needs our immediate attention going forward? ▶ If our success was completely guaranteed, what bold steps might we choose? ▶ How can we support each other in taking the next steps? What unique contribution can we each make? ▶ What challenges might come our way and how might we meet them? ▶ What conversation, if begun today, could ripple out in a way that created new possibilities for the future of (your situation)? ▶ What seed might we plant together today that could make the most difference to the future of (your situation)?
<p><i>* Source: Vogt, Eric E., Juanita Brown & David Isaacs (2003)</i></p>

2.5.3 Active listening – five key elements

Listening is one of the most important skills a trainer can have. How well he or she listens has a major impact on the training effectiveness, and on the quality of the relationship to the participants.

There are five key elements to active listening. They all help trainers ensure that they hear the other person, and that the other person knows they are hearing what they say.

1 Pay attention and listen with empathy

Give the speaker your undivided attention, and acknowledge the message. Recognize that non-verbal communication also ‘speaks’ loudly. Look at the speaker directly.

- Avoid being distracted by environmental factors.
- ‘Listen’ to the speaker’s body language.
- Refrain from side conversations when listening in a group setting.

2 Show that you are listening

- Relax and be fully present
- Use your own body language and gestures to convey your attention.
- Nod occasionally.
- Smile and use other facial expressions.
- Note your posture and make sure it is open and inviting.
- Encourage the speaker to continue with small verbal comments like ‘yes’, and ‘uh huh’.

3 Provide feedback

Our personal filters, assumptions, judgments, and beliefs can distort what we hear. As a listener, your role is to understand what is being said. This may require you to reflect on what is being said and ask questions.

- Reflect what has been said by paraphrasing. ‘What I’m hearing is.’ and ‘Sounds like you are saying.’ are great ways to reflect back.
- Ask questions to clarify certain points. ‘What do you mean when you say...’, ‘Is this what you mean?’
- Summarize the speaker’s comments periodically.

4 Defer judgment

Interrupting is a waste of time. It frustrates the speaker and limits full understanding of the message.

- Allow the speaker to finish.
- Do not interrupt with counter arguments.

5 Respond appropriately

Active listening is a model for respect and understanding. You are gaining information and perspective. You add nothing by attacking the speaker or otherwise putting him or her down.

- Be humble, open, and honest in your response.
- Assert your opinions respectfully.
- Treat the other person, as he or she would want to be treated.

2.5.4 Participatory course management: co-management committee

Short description

To create ownership for the course as well as for the results, participation should go beyond using participatory methods during a training workshop. Through a co-management committee, a setting can be provided for participants to give feedback to the trainers and to play an active role in shaping the training process.

Figure 2.5.2 Flipchart 'Participatory Course Management'



Main features

The co-management committee works on a daily basis. It will take a critical review of what has happened during that particular day. This is a precious opportunity for the trainers to get first hand feedback from the group. The following day's programme and working steps will be based on the deliberations of the committee. Based on a proposal from the trainers, the committee will discuss about the continuation of the workshop process on the following day. The more the participants of the co-management committee are involved at this stage, the more they will take responsibility for next day's training process.

Membership of the co-management committee will rotate in order to give all participants this unique learning experience. According to the number of participants and the duration of a training workshop, co-management committee members – not more than 3 – may have a one-day or a 2-day term. You should try to make it a voluntary task also offering interesting insight into the trainer's work.

Co-management committee members should be invited to take an active role during the day of their 'duty'. This may cover co-facilitation at a certain time, time-keeping, energising the group and questioning the participants individually on their impressions. A good practice is for the committee's participating members to start the following day with a participatory recap on the previous day and the presentation of the daily programme (also see TV Bakul). Psychologically, it makes a huge difference whether the participants start the day or the trainers.

Practical hints

The performance of the first co-management committee sets the example for the others to follow. Asking for

volunteers on day one normally makes the more dynamic group members respond first. Trainers should refrain from sending out clear invitations to somebody who they feel would be a constructive member of the co-management committee on day one.

Co-management committee meetings can be time consuming. Trainers may be worried that they do not have sufficient time to prepare for the following day. But evidence shows that the time invested in a co-management committee session will have clear benefits in terms of more ownership. This is the case when participants take an active role in shaping the following day's training. While trainers shouldn't cut the committee members short, they don't have to invite participants again and again to make suggestions. It may be that they are just fine with what you have suggested.

2.5.5 Visualization

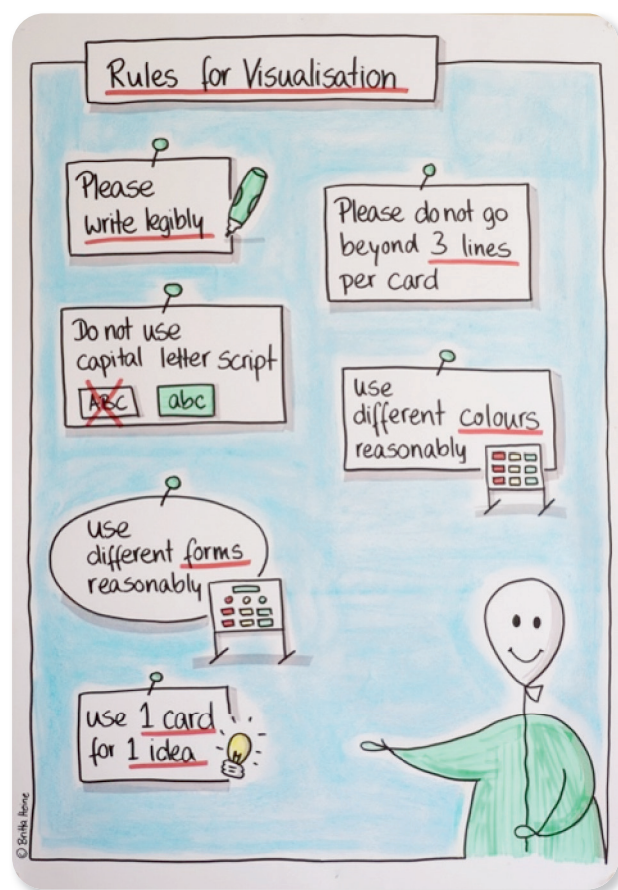
Short description

Visualisation facilitates participation because it makes discussions transparent and visible for everybody – and visualisation is fun! Joy, laughing, and a warm atmosphere create a room in which people do open up more easily, contribute more and act in a constructive way with each other. By making the invisible visible, we can express, touch, and explore ideas and relationships until we discover the missing links in our understanding and wisely choose what to do next, e.g. to join pieces of information into a cohesive picture of the whole. Visualisation thus helps to express and easily share what emerges from dialogue and reflection. Visualisation sets the stage for a collective memory being not only visible, but also mobile, even in the long run as it keeps all-necessary content for photo-documentation. Visualisation increases the possibilities of participation, especially for those who are not the first ones to speak up.

Main features

Using visualisation in an appropriate manner has numerous advantages in terms of enhancing participation and learning through:

Figure 2.5.3 Flipchart 'Guidance for visualisation'



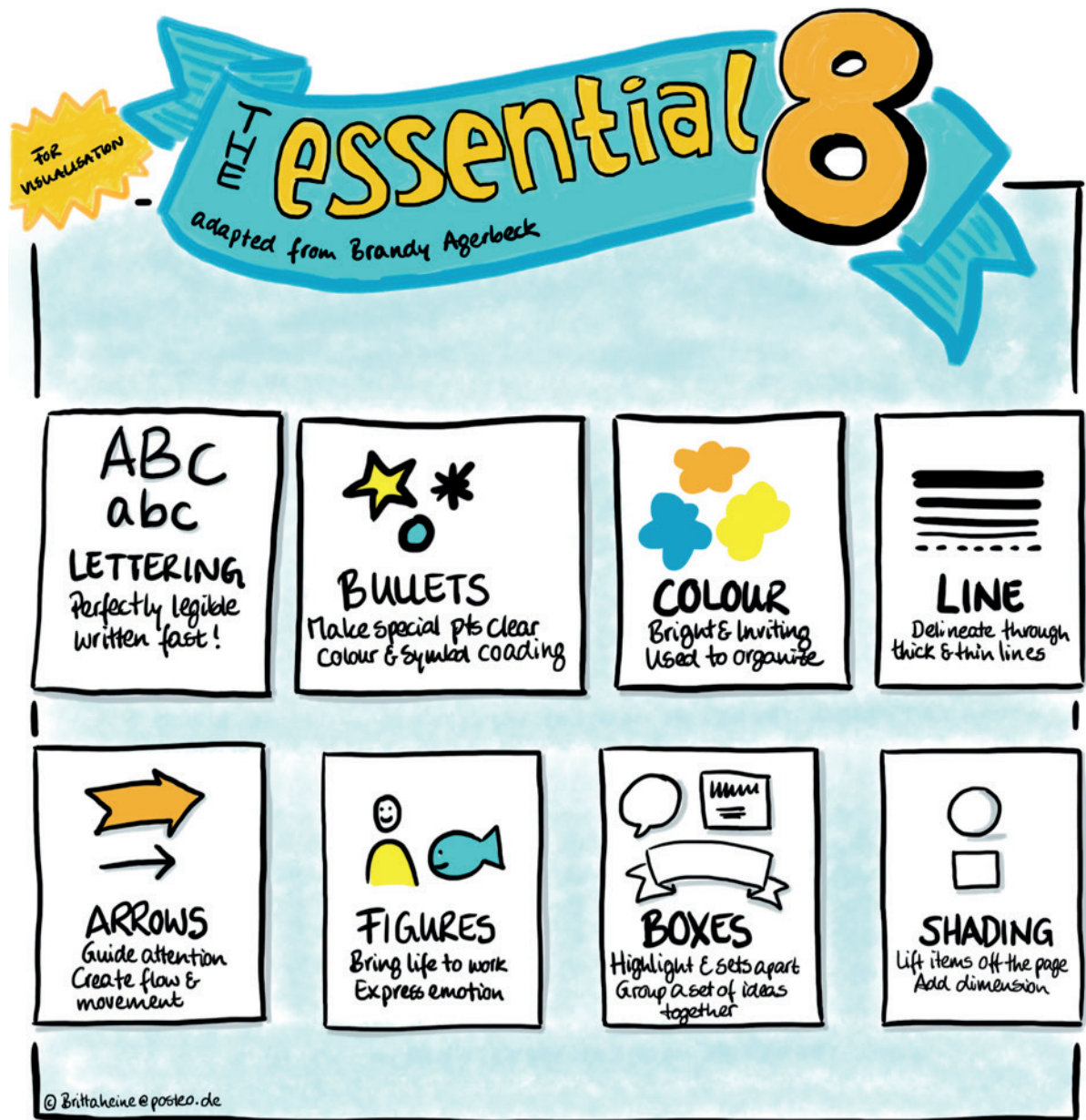
- Increasing the transparency of the group process for all participants and helping participants identify with the results.

- Improving interaction as it significantly increases the opportunities for personal expressions.
- Encouraging the quieter group members to express themselves easily.
- Serving as a mirror for what may hamper communication: controversial views, frictions, and misunderstandings.
- Encouraging short and concise expressions of concerns and/or statements.
- Providing an opportunity for somebody who wishes to make his/her expressions anonymously.
- Making a quick opinion poll of priorities in the group by everybody putting a dot against his/her preferences.
- Raising participants' ownership through good visualisation, e.g. by group work presented during a plenary session or where participants' views are incorporated into visualisation during the plenary session, and not just those of the trainer.
- Facilitating understanding because it stimulates our visual sense and not just our sense of hearing.
- Facilitating documentation.

Practical hints

- Introduce writing rules right from the beginning (see photo).
- Familiarise everybody with the use of colours, shapes and sizes of cards.
- Provide learning opportunities for the use of space and structure in visualisation.
- Provide constant feedback on the quality of visualisation.
- Serve as a model for sound and convincing visualisation.
- Enhance creativeness in using visualisation.

Figure 2.5.4 The essential 8 for visualisation



2.5.6 Generating and processing ideas

Short description

The purpose of this step is to discover new ideas and responses quickly. The emphasis is on getting as many ideas as possible, not on finding 'correct' answers. All the ideas generated through such a free flow then need to be clustered, i.e. putting together the ideas that belong in the same 'basket'. At a next processing stage, clusters may be prioritised to set the stage for deeper exploration. There are variations in how best ideas can be expressed: by writing cards individually, writing cards in small groups, so-called 'buzzing groups', or even visualising ideas immediately, i.e. writing them on a flipchart one-by-one.

Main features

Brainstorming: Using visualisation for generating ideas through brainstorming provides an opportunity for everybody in the group to express her/his ideas. It thus avoids the inevitable disadvantage of a question put verbally to a group to which only a few – the dominant speakers and maybe a few who are requested directly by the trainer – will get a chance to contribute. Generating ideas in this participatory manner increases the potential of visualising participants' experiences.

Therefore, generating ideas is not only restricted to prospective questions, but can also cover analytical questions. It will thus demonstrate how much experience the group has in identifying the different features of a key issue. Generating ideas should necessarily lead to processing. Start with a good statement or questions you want to elaborate and define rules such as 'no judgement', 'only one person talks at a time' and encourage odd ideas. Visualize the ideas visible for everybody in the room either on cards (or post-it notes) and then pin them on a board. You can already anticipate the clustering. This can be done by the trainer/facilitator or by the participants themselves. Some ideas might need clarification before the clusters are 'constructed.' Normally the clusters do not provide sufficient 'structure' to proceed to the next working step; setting priorities is therefore recommended in order to end up with a limited number of topics/issues with which to go for-

ward. It is important to clearly state that those issues, which have not been prioritised, will not automatically disappear. They may be considered at a later stage of the discussion.

Buzzing groups: A different set-up for generating ideas can be through so-called 'buzzing groups'. A plenary session breaks into sub-group of 2-4 members – just by moving the chairs – to briefly discuss a particular question. The room soon fills with noise as each sub-group 'buzzes' in discussion. Normally, 'buzzing groups' will agree on a few cards to be presented in the plenary session. 'Buzzing groups' are not only an option for generating ideas but also for reflecting on lessons learnt from a particular session, eventually with an input from the trainer followed by a plenary discussion.

Mind mapping is a fast and easy way of structuring and documenting the flow of ideas or information on a specific topic. Additionally, it allows the grouping of information according to importance. Whenever an idea, which was previously over-looked, comes up, it can easily be integrated into the mind map. Mind maps can be best elaborated in smaller groups. A plenary session is then needed to compare and synthesise the different mind maps. If groups had complementary questions to work on with the different mind maps, these can be put together to create a whole picture regarding a particular topic.

Practical hints

- Brainstorming sessions based on everybody writing cards, which are then visualised and clustered, are tricky because you risk having too many cards and spending too much time deciding which idea to attribute to which cluster.
- Questions to generate ideas need to be carefully formulated as well as the number of cards that these would result in. If, according to the number of participants, 50+ cards can be expected, it may be an option to write cards in buzzing groups.
- Clustering does not have to be done together. It can be delegated to a group of participants who will then check with the group to see if what they have produced is accurate. This is especially recommended for groups with more than 25 participants

Setting priorities is often indispensable in order to identify the main ideas/issues/topics for the next working steps. It is good to see the trends in the group discussion, but at some point the best way is to put dots next to the priority cards and then pick out the top 10 or the top 5.

2.5.7 The Circle Way

The Circle Way is a powerful **collaborative conversation approach** to exchange knowledge and personal experience, gain new insights and bring meaningful conversation to the surface. Thousands of years, people have formed a circle around the fires to share knowledge, experience, and stories to care for an organize themselves. The circle has become a place where people can listen, be heard, think, create and work together. Christian Baldwin and Ann Linea and others have reintroduced the Circle Way as a conversational methodology to private and business settings (see Baldwin & Linea 2010). In the Circle Way, the action is more formal than in casual conversation. The actual content may be the same, but the patterns of engagement – who speaks when, how people listen, how interaction unfolds and what is expected after the circle session is finished – are influenced greatly by circle structure:

To understand the power of the Circle Way and the kind of insights that can pour from the group process, it is helpful to understand that when people circle in a ring of chairs they are activating an archetype, a collectively-inherited unconscious idea, pattern of thought or image, that is universally present, in individual psyches. In other words, circle is social DNA.

Figure 2.5.5 Circle centre



The **centre** in the circle is a focal point that provides neutral space, a third point between people. In practice, it can be a candle, a bouquet of flowers, pictures related to the topic or the personal objects mentioned above. Usually only one person speaks at a time. This can be managed by using a talking piece or following an agreement. The Circle Way starts with a starting point, for example reading the training's intention and learning objectives, followed by a check-in. During the check-in participants get the chance to introduce themselves, respond to the invitation, or share stories about what brings them to the circle (i.e. the training workshop.)

The Circle Way is based on **three principles**:

- Rotating leadership
- Sharing responsibility
- Relying on wholeness

Three practices support lively engagement in the circle:

- Attentive listening
- Intentional speaking
- Attending to the well-being of the group

Three **roles** are important for the functioning of the circle: A **host** prepares the ambiance of the circle like the host of a dinner party. He or she set up the centre and holds the space for conversation and then participates in the conversation as it occurs. In a training context, you as the trainer most likely take this role. A **guardian** helps to fulfil its social contracts, timeliness, and focus. He or she mindfully watches the energy and gives signals to pause, as necessary. The guardian holds a pleasant noise-maker, and has the group's permission to interrupt the process for the purpose of slowing down a high-speed conversation to (re)focus on the intention, or to focus on the agreements. This role could be taken either by the co-trainer or a participant. Depending on the intention and setting of the circle, a **scribe** may need to take notes to catch the essential thoughts of a conversation or note a decision that has been made. For example, the scribe could note insights gathered in the reflection sessions of a training workshop.

The Circle Way can be used in training workshops, for example, to start each day with a meaningful question that everyone can share thoughts on (check-in), or to start the whole training workshop with a personal touch, by asking participants to bring an object that symbolises the training content and share its meaning in a circle at the beginning of the training workshop.

2.5.8 Group work: different settings and formats

Short description

Group work is an indispensable feature in participatory training workshops. Group work will have different functions according to a particular sequence: generating ideas, reflecting on particular issues, working-out solutions, preparing a planning etc. Compared to plenary sessions, group work provides much more room for participants to be active.

Main features

Working in small groups provides room for intensive dialogue and reflection. Ideally, all group members contribute, what would not be possible in a plenary

session. Group members only mobilise their energy if they have a clear common understanding of why they need to work together and where this will lead them.

Working in small groups provides an opportunity for the participants to test their self-regulatory abilities. This will start with the designation of a facilitator and somebody to present the results. But depending to the setting, small groups (3-5 members) may even be able to proceed without a facilitator.

Settings for group work

- Participants remain in plenary session so they do not need to move around, e.g. 'buzzing groups' (see previous section).
- When groups need to have quiet time for reflection or space for discussion without disturbing others, they may be better off in separate rooms.
- Rotating groups (in one room) is a particularly interesting setting, allowing all participants to contribute to what each group is doing: A certain number of complementary tasks are assigned to different groups. Each group starts with a particular task and then moves on to the next task for commenting and complementing what the previous group has done. According to the number of participants, it may be useful to give the same task to 2 different groups

Figure 2.5.5: Circle centre

and ask them to merge their findings into one presentation at the end.

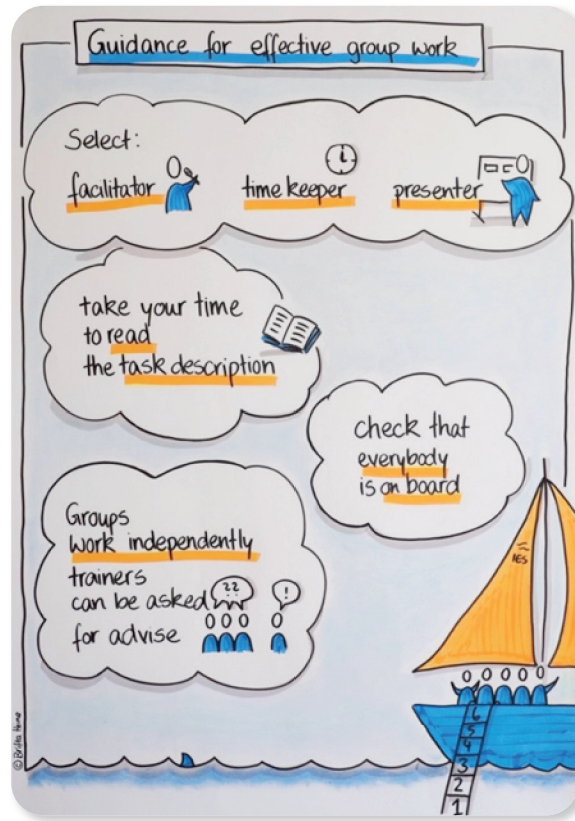
Practical hints

In preparing for group work there are a number of questions the trainers need to ask themselves:

- What are the expected results from group work?
- How many groups should be formed?
- How should the groups be formed?
- Should the groups work on the same topic or on different issues?
- What should the group assignments look like?

How should the group work results be shared and discussed in a plenary session?

Figure 2.5.6 Flipchart 'Guidance for effective group work'



Self-managed groups work well if they select a discussion leader a recorder, a reporter and a timekeeper right at the beginning of the group work (see graph).

There are some rules of thumb for trainers/facilitators for successful group work:

- Provide detailed **written instructions** for group work.
- Provide **guidance for effective group work** (see graph below), and ask the group to assign respective tasks.
- Provide a **time budget** of at least 40 minutes and make the rules explicit about how groups can get additional working time if needed.
- Do not compromise on the necessity of a **visualized presentation** of group work results. Respect the ef-

orts the groups have invested. Ask the groups to only present their conclusions' highlights if time is a concern.

- Encourage the group to **make assumptions** where they don't have information. Exercises are not about finding the correct result, but applying approaches.

There are a variety of **ways to form groups**. Counting '1-2-3' is the quickest way of forming groups. A good overview of how groups can be formed can be found in Robert Chambers' sourcebook.⁴ The most participatory way, he suggests, is to let the group decide on the criteria of group formation at the first instance and then form groups accordingly.

Support group work: Even if the trainers trust the self-regulatory abilities of a group, they should check from time to time to see if things are going smoothly. Groups may get stuck for some reason, e.g. lack of clarity about the task or difficult group dynamics, and will welcome a well-targeted intervention from the trainer. But for the sake of enhancing self-regulation the trainers may introduce the rule that they will only intervene on request.

2.5.9 Interactive exercises

Interactive exercises serve as icebreakers in between training sessions. If used wisely, they permit us to learn about complex systems and issues while interacting with each other in a non-formal way. The 'System Thinking Playbook' and 'Gamestorming' provide plenty of meaningful interactive exercises that support the learning process (see Linda Booth Sweeney & Dennis Meadows (2010 & 2016) and Dave Gray & Sunni Brown (2010)). Debriefing after each exercise is essential. The seven steps outlined below provide some practical guidance. You may choose to skip some of these steps or condense several of them into one phase of conversation with participants:⁵

1. Describe the problems and events that occurred during the exercise.

⁴ Robert Chambers: participatory workshops – a sourcebook of 21 sets of ideas & activities. London and Sterling 2002.

⁵ Source: Booth Sweeney, Linda & Dennis Meadows (2010 & 2016)

2. Determine the extent to which those problems and events also occur in the real system.
3. Decide what factors in the game were responsible for those problems and events.
4. Determine the extent to which those factors are also present in the real system.
5. Identify changes in the game that would avoid or solve the most serious problems.
6. Indicate how corresponding changes could be made in the real system.
7. Gain commitment to achieve the necessary changes in the real system.

Ensure that the players feel a sense of responsibility for the behaviour that occurred in their exercise. This is critically important. If they attribute it to some exogenous influence, random variable or a mistake by the facilitator, they will have no incentive to examine the exercise process and learn from it. Through your careful facilitation, you can help them to become students of their own behaviour. But you must do this in a way that avoids embarrassment.

2.5.10 Selection of other methods

This chapter contains a few participatory methods to be used during the training process. While an ‘information market’ can be used for sharing different categories of information (e.g. group work results) ‘expert questioning’ is a format for getting maximum value from external resource persons. ‘World Café’ is a special method for exploring and analysing key issues from different perspectives whereas ‘dispositions’ can be used for varied purposes.

Information market

Short description

The information market is a method for stimulating the exchange of information among many people simultaneously within a limited period of time. The method is based on the idea of a real market: buying and selling. This means that the seller is also keen to get feedback from (potential) buyers.

Main features

Getting started: Each participant prepares a pin board containing the information to share. Attractive media



for presentations like photos, poster, graphs etc. are displayed.

Starting the selling and buying: The participants who exhibit their boards ‘sell’ their information to other members of the group who function as ‘buyers’. The ‘buyers’ go from one board to another, read the information, raise questions and enter into a discussion on their areas of interest. Depending on what is presented sellers may invite buyers to write their comments on cards to be added to the presentation. Once the ‘buyer’ is satisfied with the information obtained from that particular market stand he/she will move on.

Changing the role: After 20 or 30 minutes the roles are changed. The former sellers of information will act as buyers and the former buyers now act as sellers.

Practical hints

- The information market is a very useful method, even for groups between 20-30 participants. For groups with a size above 30 it becomes more or less indispensable. The information market is a good alternative when participants are too tired to listen to group work presentations. If group work results are presented in such a format it is important to provide an opportunity for the ‘buyers’ to give written feedback.
- A final assessment is recommended, depending on the objective of the information market, e.g. through a flash light or, possibly, a small task force which prepares a synthesis which is then presented and endorsed by a short plenary session.
- It is essential to give clear explanations on the market rules and that whoever is responsible ensures proper time keeping.

Expert questioning

Short description

Expert questioning is a good way to get input from an external resource person in a way that responds as much as possible to participants’ needs. The expert will make no presentation and will only respond to participants’ questions. As resource persons often show up with too many and/or poorly targeted Power Point presentations, this method becomes even more attractive.



Main features

Preparation: Check with the resource person that he/she is comfortable with the method. Participants need to have time to prepare their questions, which is normally best done in groups. The questions are visualised after they are agreed upon in the plenary session.

Questioning the expert: The expert gets an immediate overview of the questions the participants are concerned with. He/she may start with one or the other question. Time for answering a particular question is limited. The expert should react to all the questions.

Lessons learnt and follow-up: A short synthesis by the trainers will close the expert questioning session. A discussion then needs to take place on how the results are to be used in the remaining workshop process.

Practical hints

- The number of questions should be limited. Prioritise, if groups come up with a lot of questions during the preparation phase. Questions, which are not prioritised, are not lost. If time allows they will be taken up during the expert questioning session.
- Time keeping is crucial. If an expert tries to focus on a few questions he/she should be reminded that this would lead to other questions being dropped, which would be against the main idea of a participant-driven expert questioning.
- The trainers should seek feedback from the group as to what extent they feel that a question is sufficiently answered. If 'yes', then a dot next to that question shows that nobody should try to come back to it.

World Café**Short description**

The World Café is a method to enhance dialogue among people from different backgrounds and different perspectives on a major issue of common interest. One of this method's special features and strengths is that people can move from one table in the Café to another. What emerges at each table, as a visualised result of the dialogue, already reflects different views and perspectives. The World Café can have a more exploratory or a more solution-oriented



focus. Two or three questions will be discussed in dialogue with a minimum of three successive conversation rounds.

Main features

The World Café starts with a well-formulated question capturing an issue of common interest. The question should be put in a way that it provides a strong incentive for starting a dialogue. People sit at tables with a permanent convenor who gets the ball rolling while the others move to other tables (after approximately 30 minutes). Ideas and thoughts are visualised on a paper tablecloth. At the beginning of the second and third round the convenor presents a little summary to the newcomers on what has been discussed so far. Finally, the highlights from what has emerged from each table's dialogue are shared, allowing for convergent and divergent features with regard to a certain issue. Results can potentially be exposed and shared in an information market.

Practical hints

- The host of the Café (trainer) needs to thoroughly explain the rules for communication in the Café. He/she needs to create a warm atmosphere where people feel comfortable sharing their views and experiences. It is the host's duty to initiate and organise the transition from one discussion to another and to facilitate the final sharing session. He/she acts as the custodian of the six World Café principles.
- The convenor needs to start the discussion at a particular table. He/she invites everybody to visualise ideas as soon as they come up. The convenor welcomes the 'travellers' from other tables and presents a short recap of what has been discussed so far.

World Café Principles

- Set the context
- Create hospitable space
- Explore questions that matter
- Encourage everyone's contributions
- Connect diverse perspectives
- Listen together for insights
- Share collective discoveries

Dispositions

Short description

'Dispositions' is a widely used a method in systemic organisational development. Relationships and/or constellations are made visible through a living 'sculpture' positioned in the room. In a less demanding variation, the method can be used to make visible the different views, opinions and backgrounds in a group.



Main features

'Dispositions' can be used at an early stage of a training workshop in order to highlight categories of participants with different backgrounds by positioning them as distinct visible groups. For ex-ample, participants may be asked to position themselves according to the type of organisation they work for: government, NGO, private sector, others. With this method the respective features of the group become easily and quickly visible. The trainers may walk around and ask people to say a few words about their organisation.

Building living 'sculptures' is also useful for visualising different views and opinions clearly and quickly. Participants are therefore asked to position themselves with regard to a controversial, provocative statement. Everybody has to take a stance according to his/her level of agreement or disagreement regarding this statement. The trainer/facilitator gives a few participants the chance to explain their position in more detail: 'Why are you standing here?'

'Dispositions' are also helpful for evaluating a training workshop or even a certain sequence with-in a training workshop. People are asked to position themselves from the centre – very satisfied – to the periphery – less and less satisfied –, again with the possibility for a few participants to ex-plain their position.

Practical hints

- Prepare the space in which participants will need to build the living 'sculpture'.
- Groups formed as part of a living 'sculpture' may be given a task or a question to start a short interactive session. As 'sculptures' are normally built according

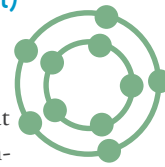
to different criteria there may be a few such interactive sessions in a row.

- Walk around and get people to talk, ensuring that they do not 'overdo' it.
- This method can also be used for positioning the participants according to controversial statements.

Peer consultation (Margolis Wheel)⁶

Short description

Margolis Wheel is a peer exchange format in which participants play the role of consultants and client and give and receive advice from a bunch of other participants. It is a great way of supporting networking and exchange among participants.



Main features

At the end of the workshop, it is time to reflect about how to apply newly acquired knowledge and skills. This exercise enables participants to share and receive advice on real challenges and opportunities they face in your own work context.

At the same time, the exercise acknowledges that there is plenty of expertise in the group and that fellow participants might have valuable knowledge and experience to share that can help each other advance in their work.

Practical hints

- Divide participants in two groups: in each the same number of pairs of chairs, facing each other, arranged in a circle (see graph).
- Ask participants to reflect and choose a problem or opportunity related to using Climate Services in their own work on which they would like to obtain advice. Remind them, everything that passes is in confidence between partners!
- Ask participants to sit on a chair: those on the inner ring are 'counsellors', and those on the outer ring are their 'clients'. There are three minutes only for each

⁶ Adopted from Robert Chambers (2002): Participatory Workshops. A sourcebook of 21 sets of ideas & activities

round of advice, roughly one minute for posing the problem, and two minutes for advice.

- Signalize after two minutes that only one minute is left. After three minutes signal again and ask all participants sitting in the outer ring to move one seat in the same direction. The inner ring, of counsellors,

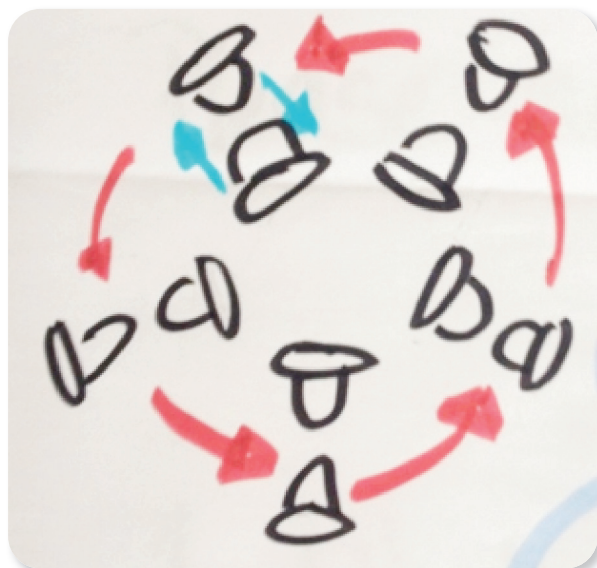
stays put. Repeat this procedure until the outer ring has gone round.

- When the outer ring has gone round, counsellors and clients swap seats. The procedure is repeated with the roles changed.
- Remind participants to take notes during the exercise, otherwise much will be forgotten.

Figure 2.5.7a Peer consultation (ToT Blue Solutions Bali 2017)



Figure 2.5.7b Setting for Margolis wheel



2.6 Feedback, reflection & learning⁷

Feedback is often an entry point to reflection. From feedback you can get the lesson that in a certain situation you could have done better despite your best intentions. Of course, you could come to the same conclusion from self-reflection, but often it is more convincing if others confirm what you might have guessed. And even if you start from feedback there is still enough to do in terms of self-reflection, either on your own or together with others. It starts with two simple questions:

- What prevented me from doing things the way I intended to do them?
- If I could start again what would I do differently?

The topics and issues to reflect may be more or less complex. But reflection will lead to a plan about what to do differently in a similar situation in the future.

From a learning perspective one could say that you have learnt something because you have analysed your behaviour and identified and specified what you will and can do better in a similar situation. And you already know that you will be in this situation in due course and you have/can make your plan about how to do things differently. This type of learning can be considered as **single-loop-learning**.

If you want **double-loop-learning** you should organise yourself in a way that you benefit from feedback and reflection loops on a regular basis. You may have realised that you can do things differently, but not following the quick-fix-mode. Regular feedback and reflection loops would provide you with an opportunity to discover that the 'quick-fix-mode' does not work because there is something related to your attitudes or to your basic competencies, which you need to address. And if you want to change something on this level it becomes indispensable to go for regular feedback and reflection.

2.6.1 Rules for Feedback

Good feedback requires rules not only for the one giving, but also for the one receiving feedback. These rules may be modified according to particular settings in which feedback is practiced, e.g. a training workshop.

⁷ Adapted from: Integrating Climate Change Adaptation into Development Cooperation – A Practice-Oriented Training Based on the OECD Policy Guidance. Trainer Handbook. GIZ 2011

Here we present the more general rules for giving and receiving feedback.

Rules for giving feedback

1. **Offer feedback, make appointments.** In the context of a training workshop it is much easier to arrange for such an appointment. Feedback loops are part of the training workshop, which, of course, should not prevent the trainers from offering feedback to whom so-ever at a particular point in time.
2. **Speak about behaviour, not personality.** Why people act as they do is part of their personality. Give your fellow participants the opportunity to change as much as they want by saying 'I observed you handled the situation in such and such a way. I liked that/I didn't like it and would prefer...' instead of saying 'you're so wonderful/so aggressive/so...'
3. **First give feedback on things/behaviour that you consider positive.** Feedback is often spoiled because the giver is eager to share his/her critical observations. Starting feedback with this will mobilise the defensive mode of the feedback receiver. Therefore it is recommended to start with a positive feedback/appreciation for the person's efforts, which will trigger an open mind for listening to the critical observations at a later stage.
4. **When speaking about behaviour to be improved describe it without judgment.** Not being judgmental at this point is crucial, to avoid otherwise defensive mode of the feedback receiver. It is wiser to explain the consequences of certain behaviour in a particular situation in order to make a convincing point about what could be improved.
5. **Give timely feedback, do not overdose.** Giving feedback immediately may be appropriate but it may also be wise to let the emotions cool a bit before giving or receiving feedback. If you wait too long the time lag may become an issue ('Why did he/she wait for so long before telling me...?') and thus impede a good feedback session.
6. **Give feedback without making reference to others.** Referring to somebody else ('I have heard from so-and-so that you...') makes your message less convincing. It looks as if you need this reference to make your point. According to the relationship between so-and-so and the receiver of the feedback the latter may switch to defensive mode.
7. **State clearly that this is your perception and not the ultimate truth.** The best way to show that it is

your perception is to speak in the 'I' form. The more you try to generalise ('It is good practice to...') the less convincing your message becomes. The advantage of the 'I' form lies in avoiding a 'yes' <-> 'no' discussion. If you say 'I felt hurt by what you were saying to me this morning' the receiver cannot get away with a 'No!'.

8. **Your feedback is an offer that the other person may use – or not use.** Pushing too hard for the receiver to proclaim what he/she will do things differently can spoil the whole session at the very last moment.
9. **Do not expect immediate visible changes.**

Rules for receiving feedback

1. **Ask for feedback when you feel there is room for improvement.** In the context of a training workshop, you may ask for feedback just because you see yourself as a learner and you want to seize the opportunity of being together with experienced trainers.
2. **Be patient, make appointments.** In the context of a training workshop, it is still good to be patient, but making appointments will be much easier.
3. **Refuse feedback when you do not feel comfortable with the issue, time and place, or the person.** It's important for the receiver to assume this responsibility in order to avoid that feedback may become, e.g. in a training workshop, a window dressing exercise.
4. **Concentrate on listening, do not correct, explain and defend.** This is the most challenging rule because there will most probably be moments where you feel invited to defend yourself. And if the feedback you are receiving is strongly judgmental you are allowed to do so. There may be the impulse to explain one's own behaviour. But it is hard to draw the line between explaining and defending.
5. **Ask for examples if you do not get the point.** This is an important strategy to push the giver to be more concrete in his/her critical observation. He/she may hope that you have understood his/her point and so there is no need to be more specific.
6. **Think about feedback before speaking about it.** Take a moment of self-reflection and don't feel under pressure to react instantly.
7. **Say 'thank you' when it is enough.** When you sense that the giver is adding on another and another critical observation help him/her to come to the end of the feedback session.

8. **You alone decide on action.** If you take action only to please the giver or because the giver has put too much pressure on you, you may try to do things differently, but without any conviction, meaning that you don't really improve on how you do things.

2.6.2 Arrangements for feedback and reflection

There are multiple arrangements for feedback and reflection: individual self-reflection, sitting together with a buddy, group feedback and reflection etc. Here we focus on what is recommended in the context of a training workshop.

Individual and face-to-face feedback and reflection in a pairing or in a small group may be used continuously during a training workshop in order to reflect on the lessons learnt from a particular session, sequence or module.

Group feedback and reflection is particularly useful in connection with simulations (After having lived a simulation it is important to step back, get out of one's role and try putting oneself in a more reflective mode. Now, for feedback and reflection to take place we recommend the following steps:

1. The team that performed during the simulation sits together with the trainers in a circle. The team gets the first opportunity to reflect on what they have done. The trainers would ask for their impressions about the quality and the pertinence of their performance and the team would eventually come to a few points with regard to the inevitable question: if you started again what would you do differently? While they are talking the others in the group (who have been actors, e.g. trainees, students, co-workers) will listen.
2. The trainers get their chance to provide feedback according, of course, to the rules described above. The receivers of the feedback, the team, may react, but according to the same rules. The others listen.
3. The trainers will give the opportunity to the 'floor' to provide feedback to the team. The trainers will have one eye on the respect given to the rules. If necessary, key learning points can be visualised. However, visualising the whole session step-by-step is not recommended because it will hamper more than support feedback and reflection.

2.7 Designing a training programme

This chapter provides an overview of what needs to be taken into consideration when designing a training programme. Regardless of whether the training program is complex or not, thorough and deliberate preparation and design are indispensable.

Even if this training manual focuses on CSI trainings, we would like to present this chapter in a way that it can also be helpful in designing training programmes and workshops in other contexts. Training design is to be seen as a crosscutting endeavour, i.e. certain steps and tasks are relevant for whatever content the training programme or workshop might focus on.

2.7.1 Make training effective

CSI-focused trainings require new technical skills at individual level and expertise in promoting the nec-

essary institutional change. While a training workshop is a good opportunity to initiate and inspire learning, changes in individual and institutional routines take time. For impacts to materialise, political awareness and will at institutional level are necessary. These can only partly be achieved through training, even with clearly mandated multipliers. Thus, training workshops always need to be aligned with other capacity development activities in order to be effective (see text box below):

Ideally, the overall strategic goal of the process is fixed first, and then training is chosen as means to this end. Trainings can be a door-opener, leading, for instance, to pilot applications. But trainings have major impacts only if they are embedded in strategically designed capacity-development, advisory and mainstreaming processes.

Four dimensions of Capacity Development

People

This dimension of capacity development primarily looks at how to develop human resources and to use them within the respective institution. It comprises the transfer of knowledge, experience, skills and values, and behavioural changes.

Training Organisational structures and resources

The aim is to boost organisational output through training and upgrading for the members of the organisation, the establishment of management and incentives systems, the development of an organisational and management culture, the improvement of work processes, and the extension of task-related organisational networks.

Networks and Cooperation

This dimension tries to develop and improve cooperation structures and networks in order to allow for an improved output of a whole system.

Framework conditions

This dimension look at how to improve legal and administrative frameworks for the activities of individuals and organisations, the gearing of state policies to development, and the promotion of cooperation between the state institutions and other stakeholders.

2.7.2 Clarify objectives and major themes and topics

We assume that an institution takes the initiative for a training programme and asks an internal or an external trainer - or a team of trainers - to prepare a training

programme. The first question the trainers must raise regards the objectives of the institution, i.e. what the institution (client) wants to achieve in the short, middle and long term. Talking about 'objectives' should include clarification on the expected outcome as well as the desired impact of a training programme. Asking the



client about objectives also clarifies their expectations vis-à-vis the trainers. Trying to understand these objectives, goes hand-in-hand with the exploration of underlying assumptions. Questions to be answered include:

- How does the training course fit into the overall capacity development strategy and change process?
- What are entry points?
- What enabling factors or challenges regarding the training topic (Climate Services, adaptation to climate change) exist in the institution (or the country)?
- What capacities and capacity gaps with regards to knowledge, skills, awareness and attitudes exist in the institution (or the country)?
- What are needs at the institutional and individual level?

The trainers and the client institution also need to agree on the approach. It will be fairly difficult to find a good compromise if the client wants an input and content driven training while the trainers are in favour of a participatory training approach. Regarding the 'approach' it is also necessary to discuss with the client institution how the training programme should be structured.

The following questions are most helpful in this respect:

- Will training workshops consisting of a single event be sufficient?
- Should a modular approach be given priority, which means organising the training process as a series of workshops, team and/or individual coaching?
- Based on the agreement on the participatory orientation of the training programme, what approach will be taken for the training process to be adopted, e.g. case method?
- On which levels should the training workshops take place, e.g. country, local, national, regional, or global?

At the end of this clarification, the trainers need to be convinced that a training programme is the right way to achieve the client's objectives. Eventually, the trainers may suggest other capacity building measures going beyond the trainers' mandate.

2.7.3 Learn about participants and their needs

The agreement with the client institution will already have provided information on the participants in the training process. But as the training programme unfolds, the answer to the question 'Who needs to participate?' will become more concrete. Criteria are indispensable in order to make a proper selection of participants.

If, for instance, 'Training of Trainers' (ToT) workshops are part of the training programme you need to define what is required from the trainers in terms of background and experiences in order to qualify for a ToT workshop? In defining criteria the organisational context needs to be taken into consideration: will the participants be in a position to use their newly acquired capacities and competencies in a way that the expected outcome and impact can be achieved?

There are other questions that have to be taken into consideration when selecting participants for a training programme:

- How many participants do you want to have in a training workshop? What is the maximum and minimum number?
- What mix do you want to have in the group in terms of experience, professional backgrounds and institutional affiliations?
- How can you make the group gender-balanced?
- What are your assumptions about the participants' openness towards a participatory training approach?

Once the participants are selected, the question needs to be raised of 'what do they expect from the training programme?' The trainers certainly have assumptions about the participants' needs and expectations.

However, there is sufficient evidence that it is useful to provide future participants with an opportunity to indicate what they want to happen during the training workshop in order for them to see it as a success. One could also pose the corresponding questions on what should not happen. This feedback is valuable for helping the trainers in designing a training programme or



a training workshop. And potential participants can eventually be involved in the design process.

2.7.4 Define learning objectives

In order to define learning objectives, it is helpful to go to the very end of the learning process by answering the following question: ‘what should participants be able to do differently/better?’

Formulation of learning objectives

Formulating learning objectives is a key step to preparing a training workshop. It is the anticipation of what participants will take home from a training workshop in terms of newly acquired abilities and competencies. This will set the stage for how they will use these newly acquired abilities and competencies in order to achieve the expected outcome and impact of the training programme/workshop. Learning objectives already provide indications on stages in the workshop process because some of the objectives might be achieved ‘on the road’, while others are only achieved at the end of the training workshop.

Arrangements for learning transfer

It might seem premature to talk about learning transfer at this stage. But preparing for learning transfer starts with the selection of participants. Conditions are favourable for learning transfer if a participant is mandated from within his organisation, i.e. his/her section or his/her department. Ideally, the superior defines his/her objectives for what he/she expects the staff member to take home from this training programme. The client organisation should do this as soon as possible.

Mandating a participant in a training workshop may take the form of a participant bringing his/her case/project to the training workshop. Maybe there are already initiatives taken in his/her organisation on designing particular trainings programmes and the trainee is now mandated to use the training workshop to get input and ideas for this internal design process to move forward.

The more an organisation shows itself indifferent to one of its members participating in a training workshop, the less likely learning transfer is to be effective.

Draw the line between ideal and minimal objectives

At this stage of the training workshop preparation there are still a lot of variables, which can only be influenced partly. With this level of uncertainty it is useful to make the distinction between ideal and minimal objectives. These could be sketched in 3 scenarios. With these scenarios the trainers are well prepared for a situation where they need to say: ‘Do we go for it or not?’ If the client organisation suddenly faces unexpected budget restrictions and wants to do the training workshop in 5 instead of 10 days, it might be necessary for the trainers to say that they cannot reach the minimal objectives with such a reduced time budget. It might then be wise for you to reconsider the whole assignment and to eventually refrain from taking it further with this client organisation.

2.7.5 Clarify budget and logistics

This is a decisive milestone in the design process because it entails negotiations with the client organisation and what is available in terms of budget and what is needed to reach the training programme’s objectives. In most cases this is a difficult **balancing act**. The client organisation might push for increasing the number of participants per training workshop while you, as trainers need to explain that you cannot reach certain learning objectives when you have a group of 25 instead of 15 participants. Another critical parameter is ‘duration’. The normal reaction of a client organisation with a tight budget is to cut down on the days for a training event and to increase the number of participants. It is crucial for trainers at this stage not to accept responsibility for achieving certain learning objectives if the duration and number of trainees are not adjusted in such a way that these learning objectives can be achieved.

Trainers need to be prepared at this point to put convincing methodological arguments on the table regarding the two key parameters: duration and number of participants. Maybe not as important, but nevertheless an important issue is the location. Choosing a loca-



tion can be tricky. Being in a windowless room in a hotel close to an airport may seem like a good idea with respect to costs and transport, but it backfires seriously. It is therefore important for trainers to lobby for a suitable venue. A good venue provides for working rooms with sufficient light and space, away from the daily life of busy organisations, but not too remote.

If they are unfamiliar with the selected venue, trainers should check whether it is suitable for a participatory workshop:

- What is the flexibility in terms of seating arrangements?
- Is there enough space to practice the mobile visualization and to work in different arrangements?
- Is it possible to present visualization results on walls? How big is the seminar room and is it shaped? Are there obstructive pillars in the room?

2.7.6 Prepare workshop structure

Based on the learning objectives it is possible to make a draft of the workshop flow. Using a mind map has proved to be very useful at this stage. The workshop flow depicts the order of working steps from the opening and introduction, to the evaluation and closing of the training workshop. It derives from the abilities of the trainers to **anticipate an exciting and effective dramaturgy for the whole learning process**. It is like a sketch map of how the workshop process is supposed to unfold. How it will really unfold is of course not predictable because this depends on what the major actors in the workshop scenery, the participants, will or will not do.

This draft of the workshop flow will serve as a starting point for developing the training workshop scenario (see below). It will also help the trainers on the first day because it is better to explain the main working steps in this manner than in a detailed programme, where the participants are unlikely to grasp immediately what to expect.

2.7.7 Develop scenario of the training workshop: content, methods, process

Based on the workshop structure, the trainers will get together to work out a detailed day-to-day scenario for the workshop process. Working on such a scenario enables you to get a feeling of what is feasible with a particular group of participants in a limited time. Introducing the notion of 'time' makes certain methodological options more or less feasible. However, it is not recommended to overdo it in the sense of starting the scenario development with the question: what should we do on the first day at 9 o'clock? Rather start with the content and the methods and at some point check how you can bring it into a meaningful timeline. There is no best practice for the structure of the scenario. Of course you need to say something about the 'what' (= content) and the 'how' (= methods), but if you want to add, for example, a column labelled 'material needed' you are free to do so. The indicated time frame in the outlines for implementation of Modules 1 to 4 always need to be adapted the context of the training.

Try to organize sessions of 45 to 90 minutes. These allow for a structured day plan which will help you and your participants to better organize themselves.

The following time allocations may work for you:

Participants already know about the topic and you want to set a basis to recover the knowledge:

- 30 minutes interactive presentation with questions to the audience and little exercises in between (buzz group to discuss a question, interactive exercises to sensitize participants for topics like change behaviours or perspectives) + 15 minutes discussion and lessons learnt.

Nobody or some participants know something about the topic and may serve as resource persons during case studies:

- 10-15 minutes introduction to the topic
- 45-60 minutes group exercise (case study with different kind of methodologies, e.g. resolve guiding questions, role play)



- 5-10 minutes presentation of results by group (only the most relevant messages, no detailed presentation, e.g. presentation in plenary, information market).
- 10-20 minutes discussion with guiding questions and documentation of lessons learnt.

You want to use the methodology for a real case in one or a series of workshops:

- Consider 3 to 6 hours working time per step to understand the methodology while participants use the tools to examine their case. If you advance on a monthly period from step to step, participants should identify themselves some tasks to respond to until the next meeting. Thus, of a period of several months, participants of such a process will learn, how to apply climate proofing to their planning processes and define the need for climate services accordingly.

Developing a day-by-day detailed moderation script

When?	What?	How?	Who?	Comments

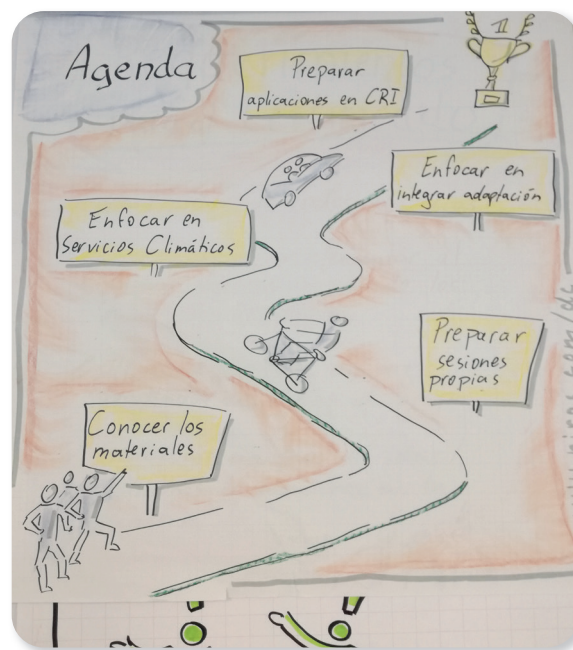
The main task in scenario development is to **combine certain contents with particular methods** in a way that a dynamic process of joint learning can unfold. Of course, the flow chart of the workshop process (see above) already gives some indications, but the real dramaturgic work happens in scenario development. Making use of a broad methodological repertoire is crucial at this stage. Methodological variability helps to keep the learning process dynamic through participants taking an active role which they will not be willing to take if certain methods are overdone – e.g. lectures, brainstorming, group work. Even ‘group work’ can be overdone if participants get the impression that they are being sent again and again to group work ses-

sions without proper sharing, analysis and synthesising plenary sessions.

Scenario development consists of different scenarios that need to be developed. By and large, it is sufficient to have one scenario for each day. It might be useful to foresee different methods that you can use at a certain stretch in the workshop process. But scenario development should not be overdone in the sense of having alternative scenarios at each point in the training workshop process.

While working on the scenario development, trainers should bear in mind that the scenario is only an anticipation of what might happen during the training workshop. It should provide guidance for the trainers, but it should not be seen as a detailed plan of action to be implemented step-by-step and word-for-word, thus sacrificing the overarching principals of methodological flexibility and process-orientation.

Figure 2.7.1 Exemplary program CSI Costa Rica 2019





2.7.8 Clarify documentation and reporting

Trainers need to decide beforehand, in consultation with the client organisation, how the results and the process of the training workshop are to be documented. This depends on the scope of documentation, i.e. if it is done 'only' for the participants or if the documentation should be made available, eventually in a more elaborated form (report, handbook), to a wider audience.

At this stage the trainers also need to decide what they want offer participants in order to support their learning transfer, in addition to the workshop documentation. This support could comprise of handouts, a reader, case studies or a handbook, just to give a few examples.

We also recommend to do a photo-documentation either by one of the trainers or better by a training assistant or the participants themselves (organised in a documentation team) at the by taking pictures of the many flipcharts and boards generated throughout the training at the end of each day. This allows participants to focus on the discussion rather than taking notes, and makes what they come up with feel like important work products.

2.7.9 Operational planning

Finally, the team of trainers will divide the tasks and responsibilities themselves according to the training structure and the developed scenario. An action plan will highlight what needs to be done by whom at which level of urgency. This plan will facilitate the preparation work of the team prior to the training workshop. It will include the preliminary agenda for the final planning meeting, which the trainers will have on the day before the participants arrive.

2.7.10 Follow-up

Very often, participants ask for post-training support when aiming to apply their newly acquired knowledge and skills, as they often feel challenged by institutional barriers. Trainers could offer coaching support, for instance via phone or Skype, or organize webinars and tailor-made refresher courses for former training participants, based on feedback from participants and commissioners and targeted to specific training needs. It is crucial to take these elements into account during the preparation phase. Follow-up processes also require time and resources.

3 Module centered guidelines for planning a workshop or training

Module 1
Introduction to the CSI Training

Module 2
The importance of climate change for infrastructure investments

Module 3
The role of Climate Services in infrastructure planning

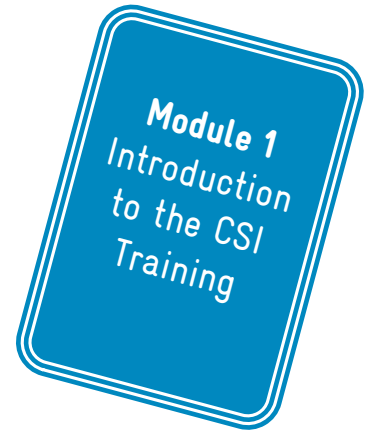
Module 4
Climate Proofing for infrastructure investments

Module 1. Introduction to the CSI Training



1.1 Learning objectives

- The trainee understands the objectives of the training;
- The trainee understands the rationale of the training methodology;
- The trainees get to know the other participants;
- The trainee knows the training schedule.



1.2 Running the sub-module

	Welcome	Interactive presentation of participants	Design of CSI training	Methods, tools, materials, and evaluation	Total
Time consideration (min)	10	40	15	15	80
Overview & sequence	<ul style="list-style-type: none"> ▶ Welcome by trainer and hosts (10 minutes); ▶ Interactive presentation of participants (40 minutes); ▶ Introduction to the design of the CSI training (15 minutes); ▶ Methods, tools and materials, requirements for certification, evaluation (15 minutes). 				
Material	▶ Flip charts.				
Preparations	<ul style="list-style-type: none"> ▶ Prepare input; ▶ Prepare the presentation exercise, including the matrices on pin boards; ▶ Prepare welcome flip charts, and flip charts with <ul style="list-style-type: none"> • the training objectives, • the training methods (Harvard Case Method), • the training agenda, • the training rules, • the knowledge barometer. 				
Key messages	<ul style="list-style-type: none"> ▶ Each member of the group brings in their very specific knowledge and background, which will be fundamental for a fruitful training outcome; ▶ The objective of the training is to form capacities in understanding how Climate Services can contribute to reduce climate risk in infrastructure planning. 				



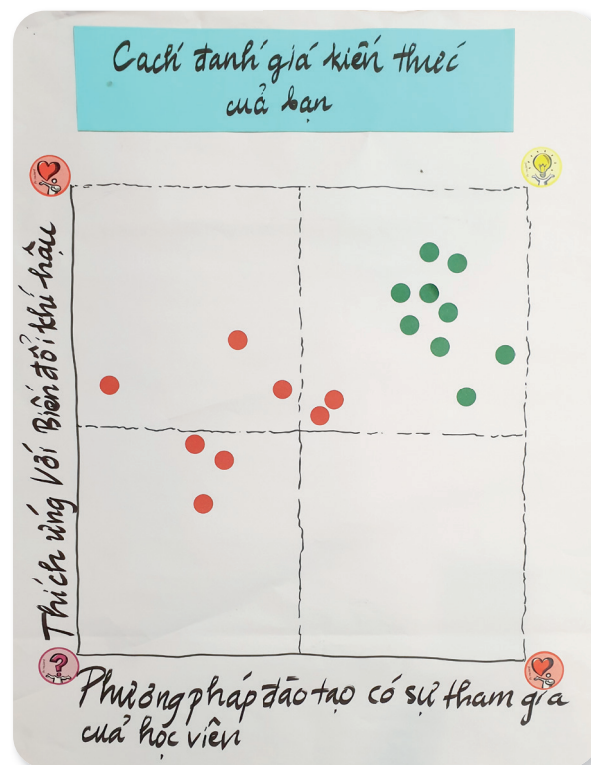
1.3 Hints for running the session

What to take into consideration

Session	Content
Welcome	▶ Trainers and hosts welcome participants and frame the training.
Interactive presentation of participants	▶ Put together couples of participants who have to introduce one to each other and exchange information to be presented. ▶ The couples come forward and introduce mutually to the plenary, pinning information on each other at the pin board regarding e.g. 'name', 'institution', 'expectations for the training', 'experience with climate change adaptation'.
Design of CSI training	▶ Present on the flipchart the objectives of the training, the different modules, and the training agenda.
Methods, tools, materials, and evaluation	▶ Present the Harvard Case Method, specific moderation material (e.g. moderation cards, and how they are used), and suggests basic rules for the training. ▶ Explain and invite participants to use the self-assessment tool 'knowledge barometer'.

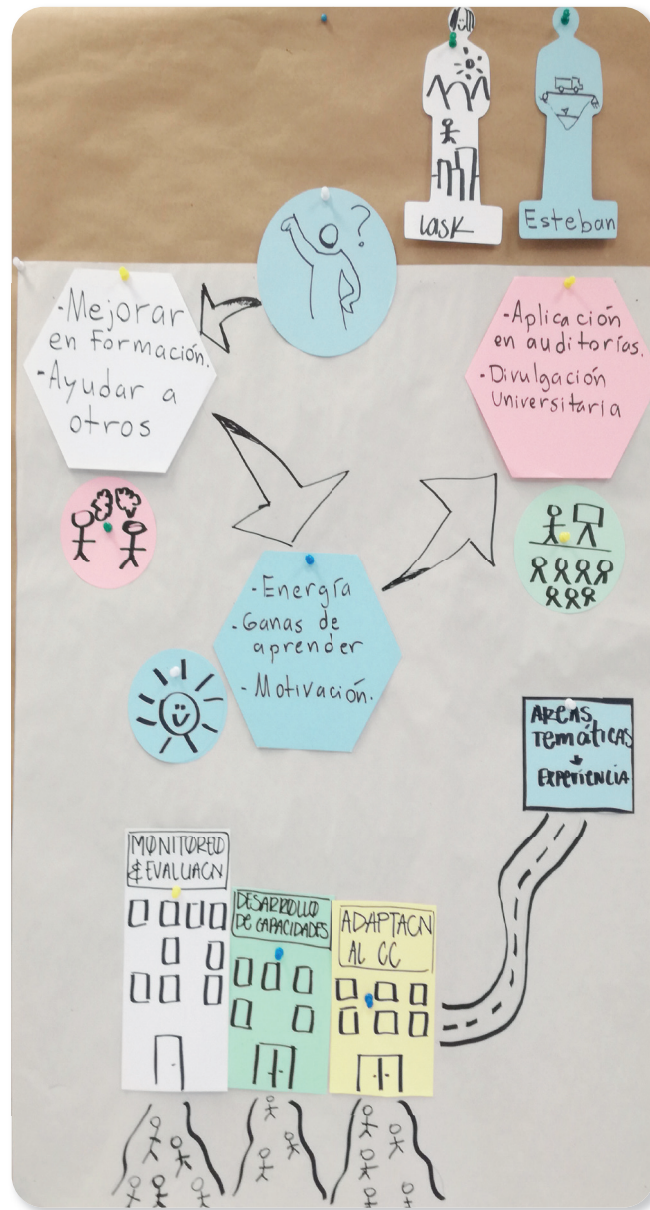
Example of the knowledge barometer

Figure 3.1.1 Knowledge barometer. The red dots were placed at the beginning, the green dots at the end of the training. The X and Y axes symbolize the knowledge level related to two different topics



Example of final results

Figure 3.1.2 Example of presentation in pairs, also using drawings



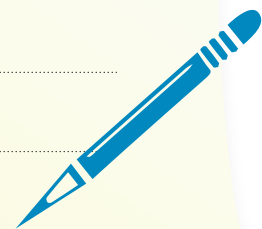
1.4 Take away messages

- This is a participatory training: learning is mainly acquired through participatory exercises.

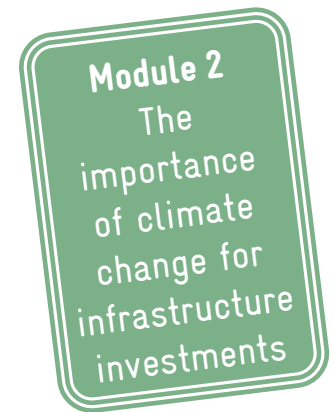


1.5 Personal notes

A large yellow notepad area with horizontal dotted lines for writing notes.



Module 2. The importance of Climate Change for Infrastructure Investments



2.1 Introduction to Climate Change



2.1.1 Learning objectives

- The trainee understands what climate change is;
- The trainee is able to name the basic climate-related terminology, including climate change scenarios, climate effects and impacts;
- The trainee understands the concept of uncertainty of climate information.



2.1.2 Running the module

Time consideration (min)	Input/ presentation	Exercises/ case work	Presentation of results	Discussion/ reflection	Total
	60	40	20	20	140
Overview & sequence	<ul style="list-style-type: none"> ▶ Presentation by trainer (60 minutes); ▶ Group work on interpretation of climate information (40 minutes); ▶ Presentation of results (20 minutes); ▶ Discussion/reflection (20 minutes). 				
Material	<ul style="list-style-type: none"> ▶ PPT Module 2.1; ▶ Hand-outs of climate information of real case example OR Metropolis Case Study. 				
Preparations	<ul style="list-style-type: none"> ▶ Prepare input; ▶ Prepare exercise, including the matrices on pin boards; ▶ Transfer outcome of reflection of the plenary to flip chart. 				
Key messages	<ul style="list-style-type: none"> ▶ Climate change has a series of uncertainties, both regarding the evolution of climate change in the future, and the interpretation of climate data; ▶ Climate change information needs to be interpreted in order to assess the certainty for certain climate hazards to happen in the future. 				



2.1.3 Hints for running the session

What to take into consideration

Session	Content
Input/presentation	<ul style="list-style-type: none"> ▶ Present the PPT Slides may need to be customized for each specific training set-up.
Exercise/group work	<ul style="list-style-type: none"> ▶ Case work on interpretation of historic climate data and climate projections; ▶ Divide participants into groups (max. 6 people); ▶ Introduce participants to the exercise, following indications of the Participant Handbook; ▶ The information to be used can come from the Metropolis Case Study, or be based on realistic climate information; ▶ Invite each group to first select a moderator, a card writer, and a presenter of final results.
Presentation of results	<ul style="list-style-type: none"> ▶ Invite each group to present their results, monitoring thoroughly the available time.
Discussion/reflection	<p>Open discussion in plenary. Possible reflection questions:</p> <ul style="list-style-type: none"> ▶ Where do users obtain the climate data and climate information they need for decision making? ▶ Which kind of climate data and climate information is needed to assess future impact of climate change? ▶ Who should be invited to assess climate data and information? ▶ What are relevant criteria for climate data robustness? Are the criteria different, depending on parameters and sources? ▶ What can users do if available climate data is not helpful enough for decision making, e.g. because they are not sufficient, or the robustness is poor? ▶ What are the results of the interpretation of the probability of climate parameter trends useful for?

Example of final results

.....



2.1.4 Take away messages

- Climate change is an issue that affects societies and their livelihoods now, and it will affect even more in the future, depending on how greenhouse gases concentrate in the atmosphere in the following years.
- It is uncertain how the climate will evolve in the next years and decades, but societies need to be prepared for this change.
- Climate change affects different regions with different intensity. Even within regions impacts of climate parameter can be different.
- Climate information helps to assess how climate parameter are changing and may change in the future. Accessing different sources of climate data and information helps to confirm eventually identified trends.
- The probability for climate change-related events to happen is connected to the clearness of trends and the robustness of available and accessed climate data and information.
- Climate parameters and effects lead to (bio-)physical and socioeconomic impacts. They can be determined by applying impact chains.



2.2 Climate Change and Public Infrastructure Investment

2.2.1 Learning objectives



- The trainee understands the importance of adaptation to climate change for sustainable infrastructure investments and is able to reflect on the role of climate services and climate proofing.
- The trainee is able to identify entry-points for adaptation to climate change in infrastructure investment planning.
- The trainee is able to identify relevant stakeholder groups who should be involved in detailed infrastructure investment planning processes.



2.2.2 Running the sub-module

	Input/ presentation	Exercise 1: Climate Lens	Presentation of results	Discussion/ reflection	Exercise 2: Climate information for decision making	Total
Time consideration (min)	60	50	20	20	90	240
Overview & sequence	<ul style="list-style-type: none"> ▶ Presentation by trainer (60 minutes); ▶ Alternative: Group work on Climate Lens (50 minutes); ▶ Presentation of results (20 minutes); ▶ Discussion/reflection (20 minutes); ▶ Alternative: Action learning on Climate information for decision making (90 minutes). 					
Material	<ul style="list-style-type: none"> ▶ PPT Module 2.2; ▶ For Exercise: <ul style="list-style-type: none"> • 1 Kg of big beans; • -60 small stones or anything similar tokens; • 7 intransparent cups; • 4 transparent cups; • 21 white 6-sided dice; • 7 red 6-sided dice; • 7 8-sided dice (preferably red); • 4 chocolates/candies (as presents to winners). 					
Preparations	<ul style="list-style-type: none"> ▶ Prepare input; ▶ Alternative: Prepare exercise 1, including the matrixes on pin boards; ▶ Alternative: Prepare exercise 2, including materials; ▶ Transfer learning goals, instructions for exercises, and key messages to flip chart. 					
Key messages	<ul style="list-style-type: none"> ▶ Tailor-made Climate Services are key to aid infrastructure investments to become climate-resilient; ▶ Entry points for climate proofing can either be in the policy cycle or in the infrastructure investment cycle; ▶ Within the infrastructure investment cycle, climate proofing can be performed in each step as a whole, or single steps of climate proofing can be developed in different moments of infrastructure investment. 					



2.2.3 Hints for running the session

Session	Content
Input/presentation	▶ Present the PPT Slides may need to be customized for each specific training set-up.
Alternative 1: Exercise 1: Climate Lens	<ul style="list-style-type: none"> ▶ Case work on applying the Climate Lens on the start of a project; ▶ Divide participants into groups (max. 6 people). ▶ Introduce participants to the exercise, following indications of the Participant Handbook; ▶ The information to be used can come from the Metropolis Case Study, or be based on realistic climate information; ▶ Invite each group to first select a moderator, a card writer, and a presenter of final results.
Presentation of results	▶ Invite each group to present their results, monitoring thoroughly the available time.
Discussion/reflection on Alternative 1	<p>Open discussion in plenary. Possible reflection questions:</p> <ul style="list-style-type: none"> ▶ Which are strategic entry points for taking up the discussion on adaptation to climate change as a support to sustainable infrastructure investment? ▶ Who are the relevant stakeholders to participate in the planning and other decision-making processes? ▶ Which role does climate already play in investment planning, both at the national/policy level, the sector level, and the object/project level? ▶ In which phases of the infrastructure investment cycle climate-related information should be taken into consideration?
Alternative 2: Exercise 2: Climate information for decision making	Please see 2.2.4 for detailed information on how to run the exercise.

2.2.4 Running Exercise: Climate information for decision making

Learning objectives

1. You will learn how uncertainty related to climate change affects investment-related decision-making under this kind of uncertainty.
2. You will experience how investments get increasingly endangered due to climate-change.
3. You will experience the value of proper Climate Services, and how they contribute to reduce climate related risks of loss and damage.
4. You will understand how adaptation measures help to reduce your climate-related risks of adverse impacts.

Content and main tasks

- Getting into the role of a decision-maker facing climate risk in the context of infrastructure development.
 - Challenge definition
- Making decisions on risk-mitigating measures.
 - Decision-making under uncertainty.



- Setting the price to purchase by auction climate information.
→ Investment decisions towards needs-adapted Climate Services.
- Setting the price to purchase by auction climate-proofing services.
→ Investment decisions towards climate-proofed infrastructure.
- Experiencing how climate change modifies risk patterns of infrastructure investment.

Method: Learning from experience with a case study

This is an activity that simulates decision-making processes under uncertainty (based on Red Cross Red Crescent 2014). You are Infrastructure Delegates, each one placed in different cities and different states of the fictitious South Country. As each state of South Country has a total of three cities, participants will sit in teams of three players. While consultation with team members is encouraged, each player's decisions are individual decisions.

The task of you and your colleagues as Infrastructure Delegates is to keep the infrastructure in your cities working, no matter how the weather or the climate is like. For this, your government gave you a budget of 10 M\$ for the next ten years, represented by 10 beans. Beans are not to be shared between participants.

Each player receives one white six-sided die, 10 beans, and a results sheet (see Annex 3.2.8). Each team receives one coloured six-sided die and one vision-proof cup.

These dice represent the historical amount of rainfall. 1 is not very much, while 6 is a lot.

There is one very strict facilitator for the whole exercise, who at the beginning of the exercise stores one eight-sided die per group, one transparent cup per each six players, and 20 tokens (e.g. red stones). They will be used during the exercise.

The winner will be the Infrastructure Delegate who has most beans left after ten years (ten rounds). The winning team will be the one with the fewest number of years with destroyed bridges. In case of a tie, the team with most total beans wins.

The specific activity

- Use a flipchart or board with markers.
- Play the following rounds, as indicated:
 - **Round 1.**
 - Each team picks up the coloured die, representing their yearly rainfall in the province. They place the die in the cup, shake it and place it on the table without looking what is under the cup.
 - If an Infrastructure Delegate wants to invest into preparedness (e.g. insurance) for an eventually catastrophic event, he/she has the choice to stand up and pay 1 M\$ (1 bean). If not, the delegate remains seated. The facilitator starts a countdown (10, 9, 8, ...), which is ended with a loud 'STOP!' Delegates must stop where they are at the very moment. If they are sitting or standing, this indicates their choice. The facilitator collects one bean from each Infrastructure Delegate that is standing and therefore decided to invest into preparedness.
 - Now each delegate rolls his/her white die, which represents the rainfall within the city.

- The amount of province rainfall – as represented under the cup – is revealed. Infrastructure Delegates stay standing or sitting. If the sum of the two dice (representing provincial and local rainfall) is 10 or greater, too much rain fell and the city is flooded, including its infrastructure. If an Infrastructure Delegate is:
 - a. Sitting and has a flood (sum of the dice 10 or more), he/she stands up and loudly says: ‘Oh No!’ As he/she had not taken any preventive measures, he/she has to pay 4 M\$ (4 beans) to the facilitator in order to fix damage on infrastructure. If he/she does not have enough beans to pay all of his/her debt, his/her city suffers from destroyed infrastructure, and he/she gets one token that has to be kept until the end of the exercise.
 - b. Standing and has a flood, they did well, as they had taken preventive measures and now do not need to fix any damage (at least not from their budget).
 - c. Sitting and had no flood (sum of the dice is lower than 10), nothing happens.
 - d. Standing and had no flood, they pay nothing, but have acted in vain and lost resources for future investment.
- The delegates register their actions and corresponding consequences on their results sheets.
- **Round 2.**
 - The facilitator introduces the possibility to acquire a Climate Service of forecasting yearly provincial rainfall. This Climate Service is represented by a transparent cup. This will allow delegates to see which regional rainfall is expected and to calculate the likelihood for a catastrophic event.
 - However, Climate Service providers only have infrastructure and personnel resources to provide this expensive tailored Climate Service for half of the provinces, and they will decide on market prices. For this reason, teams need to bid for the Climate Service. Each Infrastructure Delegate can contribute any number of beans to their team’s bid for the forecast. The teams with the highest bids will be able to see their regional die all the following 9 rounds.
 - The facilitator indicates that there is little time for consultation. Each team will send someone up to the facilitator with the bid in their cup. The facilitator starts a countdown (10, 9, 8, ...), which is ended with a loud ‘STOP!’ After this, no bids will be accepted anymore.
 - The facilitator counts the bids and determines which teams will get the Climate Service. He/she keeps the beans of the winning teams, while they get transparent cups. The other teams receive their bids back.
- **Round 3.**
 - A regular round is played as described in round 1.
 - Any implications of the CS acquired?
- **Round 4.**
 - The facilitator introduces the possibility to make the infrastructure in cities of one province climate-proofed (e.g. performing risk assessments and based on their results implement retrofitting of infrastructure, reinforcing bridge pillars, etc.). Being climate proofed means that the infrastructure will only be damaged by stronger floods (this means when both dice together sum 11 or more), and even then, the damage will only be partial. Infrastructure Delegates have to pay 3 M\$ (3 beans) in case this damage occurs.
 - However, as there are very few climate proofing experts, only one province will be able to acquire this option, and again this will be decided based on market prices. For this reason, teams need to bid for the climate-proofing activities. Each Infrastructure Delegate can contribute any number of beans to their team’s bid for the forecast. Only the team with the highest bid will be able to reduce its climate risk due to the implementation of adaptation measures. However, as teams that have not invested in Climate Services yet by acquiring the ‘transparent cup’, need to offer double as much as the teams that already have the ‘transparent cup’, as they need to invest in Climate Services first, in order to be climate proofed (e.g., team one (holding a ‘transparent cup’) offers 5 beans, and team two (holding no ‘transparent cup’) offers 9 beans. Team one wins, because team two would need to offer at least 10 beans (twice as many as team one offered) to beat team one.

- The facilitator indicates that there is little time for consultation. Each team will send someone up to the facilitator with the bid in their cup. The facilitator starts a countdown (10, 9, 8, ...), which is ended with a loud 'STOP'! After this, no bids will be accepted anymore.
- The facilitator counts the bids and determines which teams will get the climate-proofed infrastructure. He keeps the beans of the winning team, explaining them that their climate risk has been reduced now. The other teams receive their bids back.
- **Rounds 5-6.**
 - Regular rounds are played, as described in round 1.
 - The team that invested into climate-proofed infrastructure only pays 3 M\$ (3 beans) when hit by flooding (when both dice together sum 11 or more).
- **Rounds 7-10.**
 - The facilitator changes – if possible, without being seen – the 6-sided colorful 'provincial' die by an 8-sided die (those teams that still have a vision-proof cup will preferably not immediately note the difference). These new dice represent climate change what increases the likeliness of occurrence of heavy rainfall. By these means, the risk of flooding increases.
 - Regular rounds are played, as described in round 5-6.
- **After round 10.**
 - Players and teams count their beans and tokens and the facilitator determines the winners.
 - All Infrastructure Delegates who accumulated at least one token have failed despite the number of beans they managed to keep.



2.2.5 Guiding questions for reflection of exercise 2 in plenary

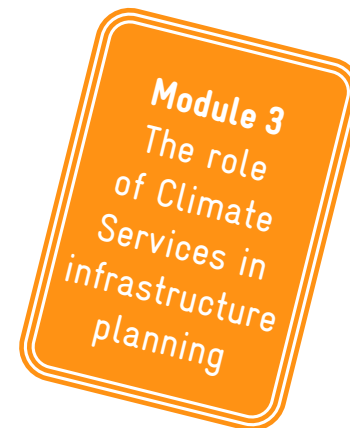
- What kinds of Climate Services are useful and needed in the context of infrastructure investments?
- What kinds of Climate Services are eventually provided by Climate Service providers that do not match the needs of Climate Service users?
- How UIPs could be structured and what are their key enabling factors?
- How have roles regarding the provision and need for Climate Services changed since infrastructure investors started to deal with climate risks?
- What are specific Climate Service requirements for public infrastructure investments? In which phases of the investment, design, construction and maintenance are which Climate Services required?



2.2.6 Take away messages

- Different infrastructure planning frameworks and cycles require different kind of Climate Services. Climate Service needs may vary regarding
 - the context of use, i.e. sector,
 - the type of decision which needs to be made based on this climate information (e.g. planning investments, mainstreaming climate change into pre-feasibility and feasibility studies, developing new building codes and standards etc.),
 - the decision-maker and his/her demands regarding the three dimensions of CS (user type),
 - the characteristics of the climate-value chain for the specific CS product, i.e. the kind of stakeholders who are involved.

Module 3. The role of Climate Services in infrastructure planning



3.1 Introduction to Climate Services



3.1.1 Learning objectives

- The trainee gains awareness and understanding of the 5 main components of the concept of Climate Services.
- The trainee understands key issues related to the Climate Service value chain, needed to construct Climate Service products.
- The trainee gains awareness about the ‘three dimensions of Climate Services’ and their relevance to create needs-oriented Climate Service products.



3.1.2 Running the sub-module

Time consideration (min)	Input/presentation	Exercises/case work	Presentation of results	Discussion/reflection	Total
	50	70+30+20+20+10	20	20	240
Overview & sequence	<ul style="list-style-type: none"> ▶ Presentation by trainer (15 minutes); ▶ Group work on carousel, step 1 (70 minutes); ▶ Group work on carousel, step 2 (30 minutes); ▶ Group work on carousel, step 3 (20 minutes); ▶ Group work on carousel, step 4 (20 minutes); ▶ Group work on carousel, step 5 (10 minutes); ▶ Presentation of results (20 minutes); ▶ Discussion/reflection (20 minutes). 				
Material	▶ PPT Module 3.1				
Preparations	<ul style="list-style-type: none"> ▶ Prepare input; ▶ Prepare exercise, including the matrixes on pin boards; ▶ Transfer learning goals, instructions for exercises, and key messages to flip chart. 				
Key messages	▶ Deliver Climate Services, considering all 5 functional components of the GFCS is of utmost importance.				



3.1.3 Hints for running the session

Session	Content
Input/presentation	<ul style="list-style-type: none"> ▶ Present the PPT Slides may need to be customized for each specific training set-up.
Exercise: Climate Service product development	<ul style="list-style-type: none"> ▶ Case work on Climate Service product development; ▶ Divide participants into groups (max. 6 people); ▶ Introduce participants to the exercise, following indications of the Participant Handbook; ▶ The information to be used should be based on realistic climate information; ▶ Invite each group to first select a moderator, a card writer, and a presenter of final results; ▶ The first discussion round should take ~70 minutes. Then, all groups rotate to the next component and discuss and possibly complement the already displayed results (30 minutes); this rotation is performed two more times (20 minutes each). At the very end, each group has 10 minutes to discuss the final results of their initial component.
Presentation of results	<ul style="list-style-type: none"> ▶ Invite each group to present their results, monitoring thoroughly the available time.
Discussion/reflection	<ul style="list-style-type: none"> ▶ Open discussion in plenary. Possible reflection questions: ▶ What is the selling point of Climate Services? ▶ What is the scope of 'considering user needs' in the context of Climate Services? ▶ What are the elements of the climate value chain and what does it describe? ▶ Which tasks and roles should be covered by a National Framework for Climate Services, and how should the different components interact with each other?

Example of final results

Figure 3.3.1 Example of group outcome for research, mobilization, and prediction (ToT Costa Rica 2019)





3.1.4 Take away messages

- Climate Services are defined as climate information which is customized to user needs.
- User needs refer to three dimensions of Climate Services (technical, service, institutional) which need to be adequately met to guarantee the usefulness and usability of Climate Service products and thus the impact on decision-making.
- A Climate Service product requires an end-to-end provision which (most often) implies a cooperative production process at which several stakeholders working together, either collectively, concurrently or successively. The process of CS production by successive value-adding by several stakeholders is termed as climate value-chain. Stakeholders of the value-chain can be classified as providers, intermediates and end-users.
- The development, production and provision of Climate Services requires five elements which need to be covered and coordinated by stakeholders from the value-chain: (i) observation & monitoring, (ii) research, modelling and prediction, (iii) Climate Service information system (iv) user interface platform and (v) capacity development
- The governance of the CS development, production and provision (coordination of the five elements) is structured within a National Framework for Climate Services that delineates tasks and responsibilities of individual stakeholders and defines legal settings. Key stakeholder groups are: NMHS, line ministries, academia, enablers, boundary organizations and users.

3.1.5 Personal notes

A large yellow rectangular area with rounded corners, serving as a space for personal notes. It contains horizontal dotted lines for writing. A blue pen icon is positioned at the bottom right corner of this area.



3.2 Demand driven Climate Services for resilient public infrastructure investments

3.2.1 Learning objectives



- The trainee understands the different requirements for Climate Service (CS) products for the specific sectoral and decision-making contexts of use and its challenges and opportunities.
- The trainee is able to apply and transfer knowledge about CS concepts into the field of infrastructure planning and climate risk assessments.
- The trainee understands the relevance of the three dimensions of CS to construct user-needs-oriented CS.
- The trainee is able to identify CS needs for specific infrastructure planning stages.

3.2.2 Running the sub-module



	Input/presentation	Role-play	Discussion/reflection	Total
Time consideration (min)	50	30 + 40 + 30	20	170
Overview & sequence	<ul style="list-style-type: none"> ▶ Presentation by trainer (50 minutes); ▶ Role-play, Phase 1 (30 minutes); ▶ Role-play, Phase 2 (40 minutes); ▶ Role-play, Phase 3 (30 minutes); ▶ Discussion/reflection (20 minutes). 			
Material	<ul style="list-style-type: none"> ▶ PPT Module 3.2; ▶ Hand-outs of Case Study (Annexes 1-3 of the Trainer Handbook) 			
Preparations	<ul style="list-style-type: none"> ▶ Prepare input; ▶ Prepare exercise, including the matrices on pin boards; ▶ Transfer learning goals, instructions for exercises, and key messages to flip chart. 			
Key message	<ul style="list-style-type: none"> ▶ Designing Climate Service Products requires discussions between providers and users, in ideal cases facilitated by Climate Service brokers via a User Interface Platform. 			

3.2.3 Hints for running the session



Session	Content
Input/presentation	<ul style="list-style-type: none"> ▶ Present the PPT Slides may need to be customized for each specific training set-up.
Exercise: Climate Service product development	<ul style="list-style-type: none"> ▶ Please see 3.2.4 for detailed information on how to run the exercise.
Discussion/reflection	<p>Open discussion in plenary. Possible reflection questions:</p> <ul style="list-style-type: none"> ▶ What are consequences of no discussion between Climate Service Users and Providers? ▶ What are key points for a good functioning of the User Interface Platform? ▶ What are key challenges in your working context to establish a User Interface Platform?

3.2.4 Running the Exercise: Role-play on User-Provider Interaction on Climate Service co-production

3.2.4.1 Learning objective

Participants shall learn the functionality and benefits of a User Interface Platform (UIP). The participants shall get aware of the value of direct and structured interaction between CS providers and users in order to identify and clarify user needs and to identify and communicate suitable CS products, their potentials and limitations (for the specific context). Thereby, the participants shall become aware of importance of the co-design of climate information for decision-making where the following questions are addressed:

- What are the technical necessities to tailor CI products in order to get the most accurate information?
- How to tailor the presentation/format of the information in order to make it understandable and usable?
- What guidance is required to make not perfectly accurate information useful for the decision-maker? How and what kind of uncertainty needs to be communicated?

3.2.4.2 Rationale of applying a role-play

The exercise will be executed as a kind of role-play. Role-play achieves best possible attachment of the learner to the circumstances and context he/she shall become knowledgeable about. As the co-design of climate information is an interactive process between stakeholders, a role-play on the importance of co-design is best suitable method. Thereby, role-play actors are jumping into the role of climate information providers and users and have to negotiate and co-design tailor-made climate information. Best learning output will be achieved through a sequence of role-plays where the first has almost no co-design elements revealing only limited usability of the climate information, and the second is programmed with a fully-fledged provider-user interaction revealing best possible and usable climate information. The comparison of outputs of both role games reveals the challenges and requirements for the successful co-design of climate information products.

3.2.4.3 Procedure of the role-play

Definition of role-play stakeholders

There will be three groups:

- **Users of climate information:** users are here defined as sectoral decision-makers who base their decisions on the provided climate-related information. The general task of the users will be to formulate their needs as detailed and sufficient as necessary in order to identify suitable CS products.
- **Providers of climate information:** providers are here defined as stakeholders who actually produce climate-related information products. This goes beyond the pure provision of data and may include stakeholders who do not observe and monitor climate themselves but do 'only' value-adding. The general task of the providers is to identify and provide suitable CS products for the specific context of the user.
- **Brokers of climate information:** brokers are here defined as intermediates that rather focus on the communication and facilitation of climate information rather than do technical tailoring of climate data. The general task of the brokers will be the moderation, observation and documentation of the interaction process.
- **Group formation:** the participants should be allocated to the groups they feel associated to best. The provider and user groups should be evenly numbered. For the broker group 2 persons are sufficient.

Phases of the role-play

The role-play can be structured into three phases:

- **First phase:** Both groups have to fulfill their tasks without interacting with each other based on publicly available information (e.g. product portals) or general sector relevant but user-unspecific information.
- **Second phase:** A structured dialogue will be initiated which allows a systematic assessment of the user needs and a negotiation on the usability of available CS products and their potential and limitation for the user's context.
- **Third phase:** The outputs of the two previous phases are being evaluated.

3.2.4.4 Execution of the role-play**Phase one**

Within the first phase there is no face-to-face interaction between the provider group and the user group. Both groups work separately with the information they get provided. They have to cope with the limitations and ambiguity of the provided information and have no opportunity to ask questions.

User group

Material:

- detailed information about the context for which climate information is required (Annex 2).
- World Bank Climate Change Knowledge Portal⁸

Task: the user group shall formulate their needs as detailed and sufficient as necessary in order to identify suitable CS products. Based on the information provided in Annex 2, users shall decide which CS products they would need. However, this information is provided in a narrative and crucial information is not clearly formulated. This should simulate the non-expertise of an end-user regarding climate information. The user group has access to the World Bank Climate Change Knowledge Portal from which they can pick the most suitable products. Users may also formulate needs on tailoring of existing products as well as products and services beyond the products available in the Knowledge Portal (**however, they will not be anticipated within this phase of the exercise. This is just for evaluation purposes in phase 3**). Users are asked to justify their choices and need to state for what reason they selected a specific product.

Provider group

Material:

- Basic information about the sectoral context for which climate information is required (Annex 1).
- World Bank Climate Change Knowledge Portal

Task: the provider group shall identify and provide suitable CS products for the specific context of the user. This shall be done on the basis of information provided in Annex 1 and products available in the portal of the World Bank Climate Change Knowledge Portal. The provider group is free to make suggestions for modifications/tailoring of available products if they think this is necessary. Providers are asked to justify their choices and need to state for what reason they selected a specific product or suggest some specific tailoring. They are al-

⁸ <https://climateknowledgeportal.worldbank.org>

so free to formulate open questions to the user's context if they feel that the information they have is not sufficient (**however, they will not be answered within this phase of the exercise. This is just for evaluation purposes in phase 3**).

Broker group

Task: the brokers split up and join the provider and user group. They observe and document the interaction process and moderate the discussion if necessary. Remember: brokers can be either people or institutions that are (self-) entitled to act as climate brokers.

Phase two

Users and providers come together in one group. The process of user needs assessment for Climate Services and the identification of suitable Climate Services is conducted together according to a guideline (annex 3). The process is guided and moderated by the observers by asking the questions and structuring the discussion.

Sections 1-2 of this process refer to the **user needs** only. The user group needs to identify the information from the narrative which is requested by the guideline in Annex 3. Brokers are asked to support the user in case they can't identify the required information. Providers are obliged to follow and understand this procedure and to ask questions in case the information the users provide is unclear or not sufficient.

Sections 3-5 refer to the identification of the **climate thresholds and related climate events**. In this section the provider group gets actively involved in the assessment process. The provider group is obliged to provide their expertise already in step 3 and get involved in the discussion. For step 4&5 the provider group is asked to review their suggestions for CS products made in phase 1 and to discuss the usability of these products and tailoring needs⁹ in the context of the new detailed information which was collected during phase 2. Suggestions on Climate Service products shall be proactively made and communicated and explained to the user group in an appropriate way regarding their relevance and uncertainty with respect to the user's context. The user group has the opportunity to ask questions and to raise a plea in case they don't understand the value of the suggested products or if they feel that their needs are not being sufficiently considered by the product. Consequently, (ideally), a process of co-production of user tailored CS products emerges.

The broker group documents the findings gained during the discussion regarding CS products and especially regarding the value of the interaction process.

Phase three (evaluation)

The observers present the results from phase 1 and 2 and identify changes in the characteristics of CS which happened in the context of phase 2:

- What are the differences in the results between phase 1 and phase 2?
- What makes the difference considering the three dimensions of Climate Services?
 - Different technical characterization of the CS products?
 - Different presentation/communication of the CS products?
- What is the value of the user-provider interaction process (SWOT)?

⁹ The opportunity to modify and tailor existing products should be kept realistically. Limitations and capabilities of CS provision must be promoted by the provider group according to their knowledge. Open questions on the feasibility of tailoring should be noted.

3.2.7 Annex 1: user needs – basic info (owned by providers)

- **Sector:** inland shipping
- **User:** logistic company
- **Region:** Rhine catchment, Germany
- **Hazard:** low flow conditions
- **Problem:** conditions in the context of climate change

3.2.8 Annex 2: Narrative user case

The user is a logistic company. The company transfers goods with trucks, train and boat all through the country and neighboring countries. Inland shipping is very attractive in the region of concern, since major waterways can be used to bypass distances of about 1000km and providing access to the maritime traffic lines.

The daily business is often affected by severe weather events that cause delays in the operating schedule due heavy rain, black ice or storms which impede full travel speed or even cause blockage of the roads or rails due to accidents, fallen trees or landslides. However, a relatively new disruption of the user's business refers to the transport by ships on large rivers. Floods, especially during spring, as well as low flows disrupt the shipping traffic and impede the transport of goods. Low water levels are of special concern since they cause a rather long-term disruption of traffic. Furthermore, there is little routine in managing such events since such events didn't happen very often in the past and there is no reliable forecast for such events.

Up to now, normal low water events were manageable by the company in a way to mitigate economic losses and avoid the disruption of transport. This is done by charging the vessels not to the maximum, using smaller boats and more boats in a row as well as by temporary storage of the non-perishable goods. These measures reduce the maximum flotation depth of 4m by around 25% and allow shipping also at low water levels.

However, such a situation is only acceptable for about two weeks without suffering substantial economic losses. In the last couple of years, however, the low water situations at which no traffic is possible at all tend to occur more often than normal. Such extreme events occur when there is less than 1.5 m between the vessel and the ground. Such situations are only acceptable for 1-2 days and can only be met by organizing different vessels with different construction design, e.g. less flotation depth which would be a major investment. Another opportunity would be the deepening of the waterway which would be not in control of the logistic company alone. The acquisition of new vessels would be a big investment for the company which needs to be carefully weighted regarding costs and benefits of the added value of the new vessels for the upcoming couple of around a half century.

3.2.9 Annex 3: Structured user needs assessment for CS

1. Delineate the context of your infrastructure system

- What is the infrastructure of concern?
- Do you deal with a single infrastructure object or an infrastructure network?
- What is your infrastructure investment context?
- What is the spatial coverage of the infrastructure (network)?
- What is the geographic type of region of your infrastructure?

2. Identify & select critical climate sensitive infrastructure components

- What a components or operational processes which are most critical for the functionality and safety of the infrastructure?
- What are the life cycles of the identified components?
- Which of the selected infrastructure components and operational processes are sensitive to climate effects?
 - What are the consequences of climate-related impacts on these components or operational processes? Are they critical?
- What are the climate-related hazards/events/phenomena that infrastructure components and operational processes are sensitive to?

3. Define load thresholds of selected infrastructure components for specific climatic parameters (sensitivity analysis)

- What are climate-related thresholds of the selected components and operational processes that cause the undesired consequences when being exceeded?
- How are they characterized regarding intensity, duration and frequency?

4. Translate load thresholds into critical climate events / 'hosting events' representing infrastructure thresholds

- What are climate parameters, events, phenomena or indices which correlate best with the identified climate-related hazards causing the exceedance of component-specific thresholds?

5. Projection of these critical climate events or surrogate events and develop climate indices for scenario construction

- Are there climate-projections available for the identified critical climate events?

If not, is there any other climate parameter, index or phenomena which indicate the identified critical climate event and which can be projected or rather shows some signal?

Module 4. Climate Proofing for Sustainable Infrastructure Investments



4.1 How to get started



4.1.1 Learning objectives

- The participant understands the common climate proofing approach to be applied in the context of each climate proofing entry-point in the infrastructure investment cycle.
- The participant is able to identify entry-points for climate change adaptation for infrastructure investment from national or territorial perspective.
- The participant is able to identify potential climate related risks, affected infrastructures, related landuse systems (landscape approach) and stakeholders.
- The participant is able to identify non-climate factors which put pressure on the territory and its assets.



4.1.2 Running the sub-module

Time consideration (min)	Input/presentation	Exercises/case work	Presentation of results	Discussion/reflection	Total
	20	45	10	15	90
Overview & sequence	<ul style="list-style-type: none"> ▶ Presentation by trainer (20 minutes); ▶ Exercise with Climate Lens (45 minutes); ▶ Presentation of results (10 minutes); ▶ Discussion/reflection (15 minutes). 				
Material	<ul style="list-style-type: none"> ▶ PPT Module 4.1; ▶ Hand-out of real case example OR Metropolis Case Study. 				
Preparations	<ul style="list-style-type: none"> ▶ Prepare input; ▶ Prepare exercise, including the matrixes on pin boards; ▶ Transfer learning goals, instructions for exercises, and key messages to flip chart. 				
Key messages	<ul style="list-style-type: none"> ▶ The Climate Lens allows to screen a territory for potential climate related risks and affected infrastructure as well as economic sectors. ▶ To raise awareness among decision makers, the climate lens is an appropriate tool to do a rapid risk appraisal and identify major assets to be considered. ▶ Useful tool if the role of landuse systems, ecosystems etc. shall be emphasized for non climate and climate pressures on infrastructures. 				

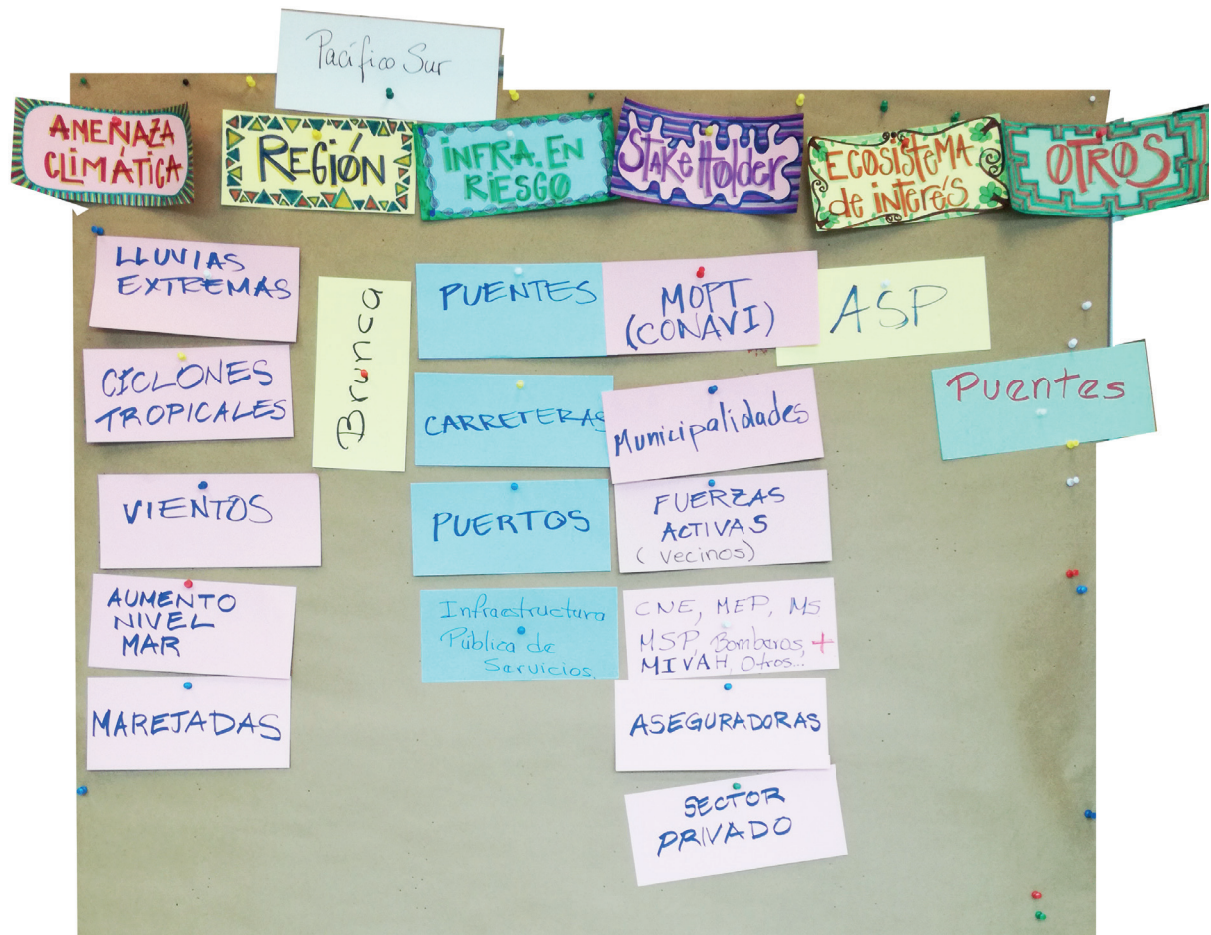


4.1.3 Hints for running the session

Session	Content
Input/presentation	<ul style="list-style-type: none"> ▶ Present the PPT. Slides may need to be customized for each specific training set-up.
Exercise: Climate Service product development	<ul style="list-style-type: none"> ▶ Case work for climate lens; ▶ Divide participants into groups (max. 6 people); ▶ Introduce participants to the exercise, following indications of the Participant Handbook; ▶ The information to be used should be based on realistic climate information OR the Metropolis Case Study; ▶ Invite each group to first select a moderator, a card writer, and a presenter of final results.
Presentation of results	<ul style="list-style-type: none"> ▶ Invite each group to present their results, monitoring thoroughly the available time.
Discussion/reflection	<p>Open discussion in plenary. Possible reflection questions:</p> <ul style="list-style-type: none"> ▶ Which entry points for adaptation to climate change did you identify at the level of the exercise? ▶ Which were the major challenges you had faced during the exercise? ▶ Which information and knowledge were missing with specific reference to climate services? ▶ Which stakeholder groups are key as participants in the screening and scoping exercise and who should be involved in the development of climate service products?

Example of final results

Figure 3.4.1 Example of final results (ToT Costa Rica 2019)

**4.1.4 Take away messages**

- Non climate pressure on assets in a territory are increased by climate related risks.
- The climate change related increase of extreme weather events and slow onset puts stress on public infrastructure and related public and private goods.
- Successful transformation towards climate-resilient infrastructure requires integrating climate proofing into the whole investment cycle, adapting the objectives and safeguards infrastructure is evaluated against.
- Introducing climate-resilience criteria in the planning of infrastructure is a key element of ensuring sufficient funding for adapting infrastructure to climate change. It needs to be reflected, i.e., in how the costs and benefits of investments are evaluated as well as in budget planning.
- Ecosystem services have the potential to mitigate climate change effects like flooding, storm surges, heat waves etc. and should be considered in a holistic approach of climate smart infrastructure investment.



4.1.5 Personal notes

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4.2 Screening and Scoping



4.2.1 Learning objectives

- The participant is able to identify entry-points for climate change adaptation into the infrastructure project process.
- The participant is able to frame the context and objectives of climate proofing according to the selected entry point in the infrastructure investment process.
- The participant understands the role of climate proofing and climate services in the project development phase of the infrastructure investment process.
- The participant is able to identify non-climate factors which interact with climate effects.
- The participant is able to identify and appoint key stakeholders and their roles, tasks and interaction within the project.



4.2.2 Running the sub-module

Time consideration (min)	Input/presentation	Exercises/case work	Presentation of results	Discussion/reflection	Total
	35	60	20	20	135
Overview & sequence	<ul style="list-style-type: none"> ▶ Presentation by trainer (35 minutes); ▶ Exercise on Screening and Scoping (60 minutes); ▶ Presentation of results (20 minutes); ▶ Discussion/reflection (20 minutes). 				
Material	<ul style="list-style-type: none"> ▶ PPT Module 4.1; ▶ Hand-out of real case example OR Metropolis Case Study. 				
Preparations	<ul style="list-style-type: none"> ▶ Prepare input; ▶ Prepare exercise, including the matrixes on pin boards; ▶ Transfer learning goals, instructions for exercises, and key messages to flip chart. 				
Key messages	<ul style="list-style-type: none"> ▶ Climate Proofing is a methodological approach aimed at incorporating issues of climate change into planning, consisting of five steps. ▶ Climate screening and scoping is the first step of Climate Proofing, aimed at making a rapid assessment on potential climate risk and identifying infrastructure (sub-) components or systems to be under potential risk. 				



4.2.3 Hints for running the session

Session	Content
Input/ presentation	▶ Present the PPT 4.2. Slides may need to be customized for each specific training set-up.
Exercise: Climate Service product development	▶ Case work on climate screening and scoping; ▶ Divide participants into groups (max. 6 people); ▶ Introduce participants to the exercise, following indications of the Participant Handbook; ▶ The information to be used should be based on realistic climate information OR the Metropolis Case Study; ▶ Invite each group to first select a moderator, a card writer, and a presenter of final results.
Presentation of results	▶ Invite each group to present their results, monitoring thoroughly the available time.
Discussion/ reflection	Open discussion in plenary. Possible reflection questions: ▶ Which entry point for adaptation to climate change did you use at the level of the exercise? ▶ Which were the major challenges you had faced during the exercise? ▶ Which information and knowledge were missing with specific reference to climate services? ▶ Which stakeholder groups are key as participants in the screening and scoping exercise and who should be involved in the development of climate service products?

Example of final results

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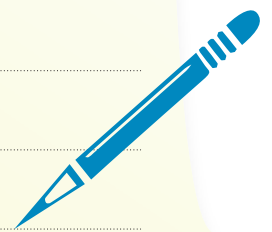
4.2.4 Take away messages

- Different entry points for climate proofing of infrastructure investments exist, e.g. the development or revision of building codes and standards for the design of infrastructure, project preparation such as pre-feasibility and feasibility studies of infrastructure project development, as well as during the realization of such projects and the monitoring of their performance. In addition, infrastructure investment policies and plans can be subject to climate proofing.
- The existence of all these entry points reveals that climate services are required in different contexts and settings and hence have manifold application areas. This means that also different approaches and aggregation levels towards assessing risks and therein, developing climate service products exist.
- Climate service providers need to be capable to respond to these distinct demands and follow structured approaches towards understanding user needs.
- The first step of climate proofing, the screening and scoping helps to identify the most relevant climate hazards, vulnerable infrastructure components of a project (strategy or plan) with respect to these, further information gaps and key stakeholders.



4.2.5 Personal notes

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4.3 Climate risk assessment and the role of Climate Services



4.3.1 Learning objectives

- The trainee understands the terminology and concept of Climate Risk Assessment for infrastructure projects as a Climate Service product following the PIEVC Engineering Protocol.
- The trainee is able to identify needs for the development of climate services products.
- The trainee is able to apply the experiences from the exercise to other infrastructure projects.



4.3.2 Running the sub-module

Time consideration (min)	Input/ presentation + action learning	Exercises / case work	Presentation of results	Discussion/ reflection	Total
	50 + 30	180	30	30	320
Overview & sequence	<ul style="list-style-type: none"> ▶ Presentation by trainer (50 minutes); ▶ Action learning on the risk terminology (30 minutes; see detail below); ▶ Group work on risk assessment (180 minutes); ▶ Presentation of results (30 minutes); ▶ Discussion/ reflection (30 minutes). 				
Material	<ul style="list-style-type: none"> ▶ PPT Module 4.2; ▶ Action learning pin-board and cards; ▶ Hand-out of real case example OR Metropolis Case Study. 				
Preparations	<ul style="list-style-type: none"> ▶ Prepare input; ▶ Prepare the action learning on risk terminology pin-board and cards; ▶ Prepare exercise, including the matrixes on pin boards; ▶ Transfer learning goals, instructions for exercises, and key messages to flip chart. 				
Key messages	<ul style="list-style-type: none"> ▶ Risk assessment is the second step of the Climate Proofing approach; ▶ Risk assessment are performed for single hazards, defined by infrastructure sub-component sensitivity thresholds; ▶ There are multiple methods to assess sensitivity thresholds; ▶ Risk is composed by exposure, sensitivity, adaptive capacity, and the likeliness of the hazard; ▶ It is important to also analyze non-climate driving factors for risks, as well as possible consequences of potential impact on the infrastructure; ▶ The quantification of risk is relevant to prioritize areas of and need for action, as well as to set a baseline to monitor climate risk. 				



4.3.3 Hints for running the session

Session	Content
Input/presentation + action learning	<ul style="list-style-type: none"> ▶ Present the PPT. Slides may need to be customized for each specific training set-up; ▶ Before introducing the concept of risk, interrupt the PPT and perform the action learning exercise on the risk terminology. Use hints on 4.2.4 to perform the exercise.
Exercise: Infrastructure vulnerability and risk assessment	<ul style="list-style-type: none"> ▶ Case work on infrastructure vulnerability and risk assessment; ▶ Divide participants into groups (max. 6 people); ▶ Introduce participants to the exercise, following indications of the Participant Handbook; ▶ The information to be used should be based on realistic climate information OR the Metropolis Case Study; ▶ Invite each group to first select a moderator, a card writer, and a presenter of final results; ▶ If time is a concern, perform the exercise focusing only on one infrastructure sub-component among the different working groups.
Presentation of results	<ul style="list-style-type: none"> ▶ Invite each group to present their results, monitoring thoroughly the available time.
Discussion/reflection	<p>Open discussion in plenary. Possible reflection questions:</p> <ul style="list-style-type: none"> ▶ Which were major challenges you faced when performing this exercise? ▶ Why is it important to perform a climate risk assessment? ▶ What can be done if information to perform the climate risk assessment is very scarce? ▶ Which are key factors when planning to perform a climate risk assessment? ▶ What kind of resources are needed to perform a climate risk assessment? ▶ Which climate services are needed to perform a climate risk assessment? ▶ Which stakeholders groups are key as participants in the climate risk assessment process (refer to the Climate Service Value Chain)? ▶ How should a climate risk assessment be designed to fit to your working reality?

4.3.4 Running the action learning: terminology of risk¹⁰

4.3.4.1 Learning objectives

- Understand key terms related to climate change risk.
- Learn how to use the terminology.
- Learn how to identify these factors in a situation and identify which factors can be easily improved to reduce vulnerability.

The **objective** of the action learning is to clarify the terms describing the factors that have to be taken into account when analysing climate impacts and risks¹¹. These terms are needed later to perform the group exercise.

¹⁰ Adapted from: Heine, B. 2018. Blue Solutions Trainings. Trainer Manual. GIZ, Eschborn and Bonn, pp 158-160.

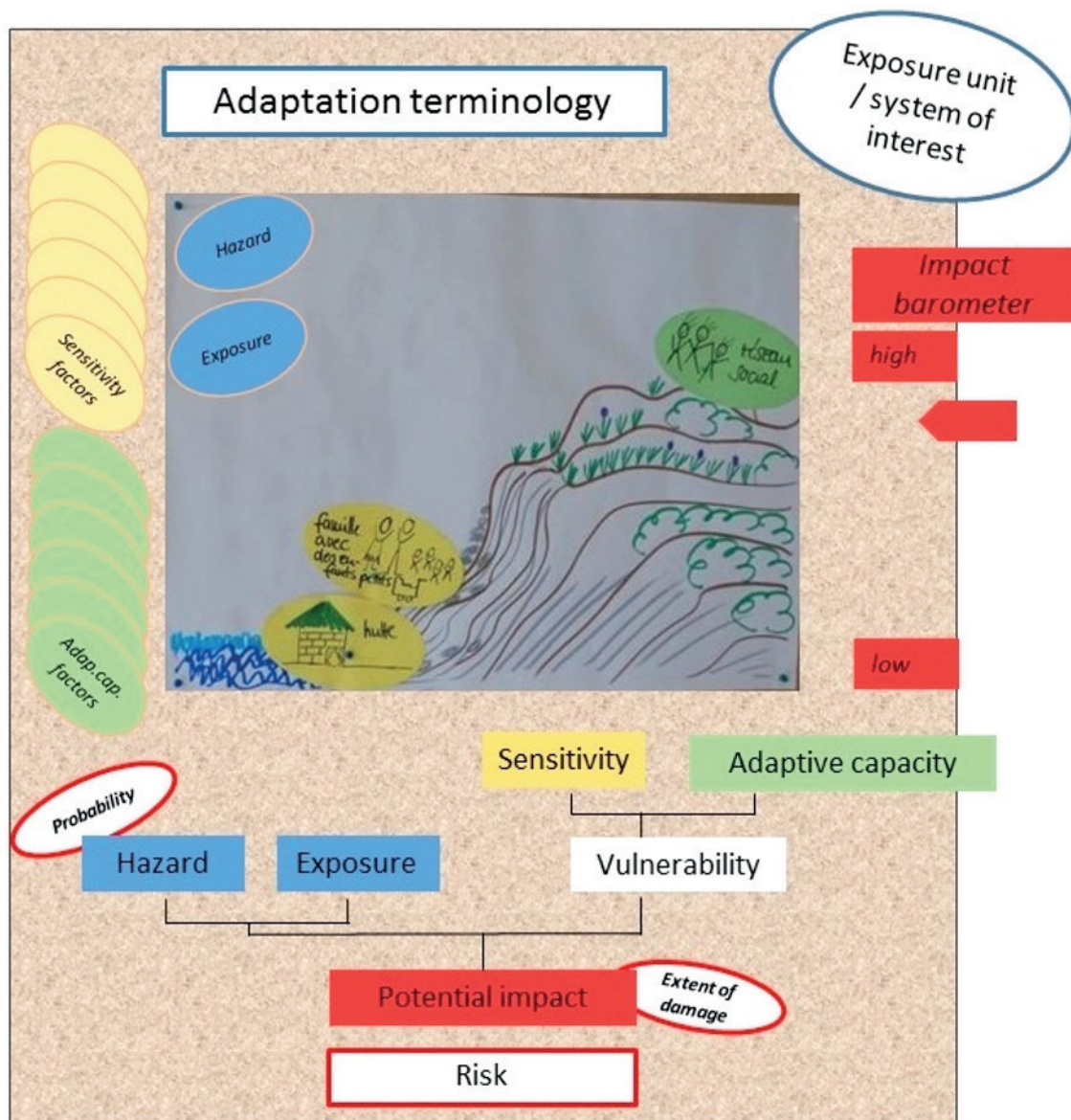
¹¹ The glossary (IPCC AR5) can be downloaded here <http://ipcc-wg2.gov/AR5/images/uploads/WGIIAR5-Glossary-FGD.pdf>

4.3.4.2 Prepare the board

- Draw a landscape, including the ocean or a river, a low-lying coastal or riverine area, and a slope.
- Prepare cards that depict the factors (oval in the figure above) and keep them aside.
- Prepare cards that state the correct terms for the factors and pin them as shown at the bottom of the board, but showing their blank back (do not yet draw the lines between the factors).

Hints:
Stick to a colour code, i.e. the cards depicting the different factors should have the same colour as those showing the term. These colours code should also be used later in the group exercise.

Figure 3.4.2 Board 'Action Learning Adaptation Terminology'



4.3.4.3 How to work with the board

The exercise aims to make the complex terms more tangible and lively. Thus, take examples from your own work to illustrate factors, tell little stories and ask participants for real life examples.

1. The factor 'Hazard'

- Pin the hazard card (e.g. flood) into the landscape and tell a little story about the event that takes place.
- Ask participants for the technical term that describes the fact.
- Introduce the term, ask participants to read the definition in the glossary and turn over the card at the bottom of the board.

2. The factor 'Exposure'

- Place a card (e.g. a house) in the low-lying area and then shift it to the hill.
- Ask participants about the difference of what happens to the infrastructure and the people living there.
- Ask for the technical term that describes the fact.
- Introduce the term, ask participants to read the definition in the glossary and turn over the card at the bottom of the board.

3. The factor 'Vulnerability'

- Ask participants if all people and ecosystems being exposed will be impacted in the same way. Probably they will say no.
- Explain that vulnerability reflects the status quo of the system, ask participants what factors determine the current situation.
- Pin cards illustrating sensitivity factors (e.g. house with bricks, house on stilts – you can also use ecosystem features, e.g. water tolerant tree species and ground nesting birds).
- Ask participants for the technical term that describes such facts.
- Ask participants to read the definition in the glossary and turn over the card at the bottom of the board.
- Pin cards illustrating adaptive capacity factors (e.g. early warning on the radio, escape plans, financial resources).
- Ask participants for the technical term that describes such facts.
- Ask participants to read the definition in the glossary and turn over the card at the bottom of the board.
- Ask participants to read the definition 'vulnerability' in the glossary and turn over the card at the bottom of the board.
- Reiterate that climate change adds to existing development challenges (vulnerabilities).

4. The '(Potential) Impact'

- Discuss with participants what happens if a society of certain vulnerability in a certain place is affected by a hazard.
- Introduce the term 'impact' (and explain that it is sometimes also called 'effect').
- Discuss why we say 'potential' impact (as the future will always remain unclear).
- Repeat the different terms, and draw the lines that show their connection.
- Introduce the 'impact barometer', repeat that a hazard's impact depends on the status quo of the affected system.

Hints

- Try to keep things simple.
- Do not fall for the temptation of finding exact and un-debatable definitions – which is impossible in social science.
- And by all means try to stay clear of the 'everything relates to everything-trap' – while it's probably true it is not useful for any further discussion.



5. **Play with the board, use the array of cards available to create different situations (or ask a participant to do so), and ask a participant to operate the ‘impact barometer’.**

- Discuss how factors can be influenced: exposure, sensitivity, and adaptive capacity? What is easy or difficult, cheap or costly, socially acceptable or not?

6. **e ‘risk’**

- Refer to the ‘potential’ impact and ask participants about probabilities in their own lives (e.g. when having a baby probability is roughly 50% chance of having a baby girl and 50% of having a baby boy).
- Link to climate change and its impacts (e.g. extreme weather events will occur more often = become more likely). What might be the probability of the flood hazard to happen during the life cycle of the houses.
- Pin card ‘probability’ next to hazard.
- Then discuss ‘extent of damage’ – ask participants for examples from their own lives (e.g. having a car accident and degree of injury with/without airbag; or you overslept on a normal work day or at your first day in the new job).
- Link to climate change and its impacts (e.g. a strong rain hits a rural area with degraded soils or a forested area; or sea level rise in a densely populated coastal city like Lagos).
- Explain that ‘probability’ is more linked to the hazards itself and ‘extent of damage’ is related to the biophysical and socio-economic impacts.



4.3.5 Take away messages

- Climate risk assessment is a decision support tool. Hence, results shall provide direct utility for taking adaptation decisions.
- Climate risk assessment is a climate service and represents a multi-stakeholder process representing different disciplines.
- Facilitating a climate risk assessment process relates to the coordination of support and contributions of a range of stakeholders.
- Risk assessments and related adaptation decision support always occur under conditions of uncertainty influencing the distribution of liabilities, and accountabilities for decision- making.
- Metrics and approaches towards risk assessment can vary depending on actors’ capacity, whilst the equation for assessing risk remains the same. Flexibility in the operationalization of the assessment is needed depending on requirements, capacities and resources.
- Engineering risk assessment can include a mix of qualitative (in the absence of data) and quantitative assessment approaches.
- The system of interest in the context of infrastructure needs to be defined based on the anticipated assessment scale, as well as on an infrastructure specific design-, functional- and operational components.
- The definition of climate parameters, indices and projections to be applied depend heavily on political requirements, the sensitivity / vulnerability of the infrastructure (Impact thresholds), as well as the life cycle of the infrastructure.
 - Easy access and tapping effectively on climate service capacities and resources is a pre-conditions for the uptake of climate information in processes of risk assessment.



4.3.6 Personal notes

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4.4 Identification and selection of adaptation measures

4.4.1 Learning objectives



- The trainee understands the concept of Adaptation Assessment, i.e. how to identify and select adaptation measures for infrastructure projects.
- The trainee is able to identify and cluster adaptation options.
- The trainee understands the difference among tools available for selection of adaptation measures.
- The trainee understands the role of Climate Service Products as an adaptation option.

4.4.2 Running the sub-module



Time consideration (min)	Input / presentation	Exercises / case work with MCA	Case work with economic analysis	Presentation of results	Discussion / reflection	Total
30		70	60	30	30	220
Overview & sequence	<ul style="list-style-type: none"> ▶ Presentation by trainer (30 minutes); ▶ Group work on identification and selection of adaptation options with MCA (90 minutes); ▶ Optional: Economic analysis of adaptation options (60 minutes); ▶ Presentation of results (30 minutes); ▶ Discussion/reflection (30 minutes). 					
Material	<ul style="list-style-type: none"> ▶ PPT Module 4.3; ▶ Hand-out of real case example OR Metropolis Case Study 					
Preparations	<ul style="list-style-type: none"> ▶ Prepare input; ▶ Prepare exercise, including the matrixes on pin boards; ▶ Transfer learning goals, instructions for exercises, and key messages to flip chart. 					
Key messages	<ul style="list-style-type: none"> ▶ Climate adaptation options are linked to the outcomes of the climate risk assessment and target to reduce exposure and vulnerability to climate change, thus reducing climate risk; ▶ Different tools exist to choose the most suitable adaptation options. These are always context-specific. 					

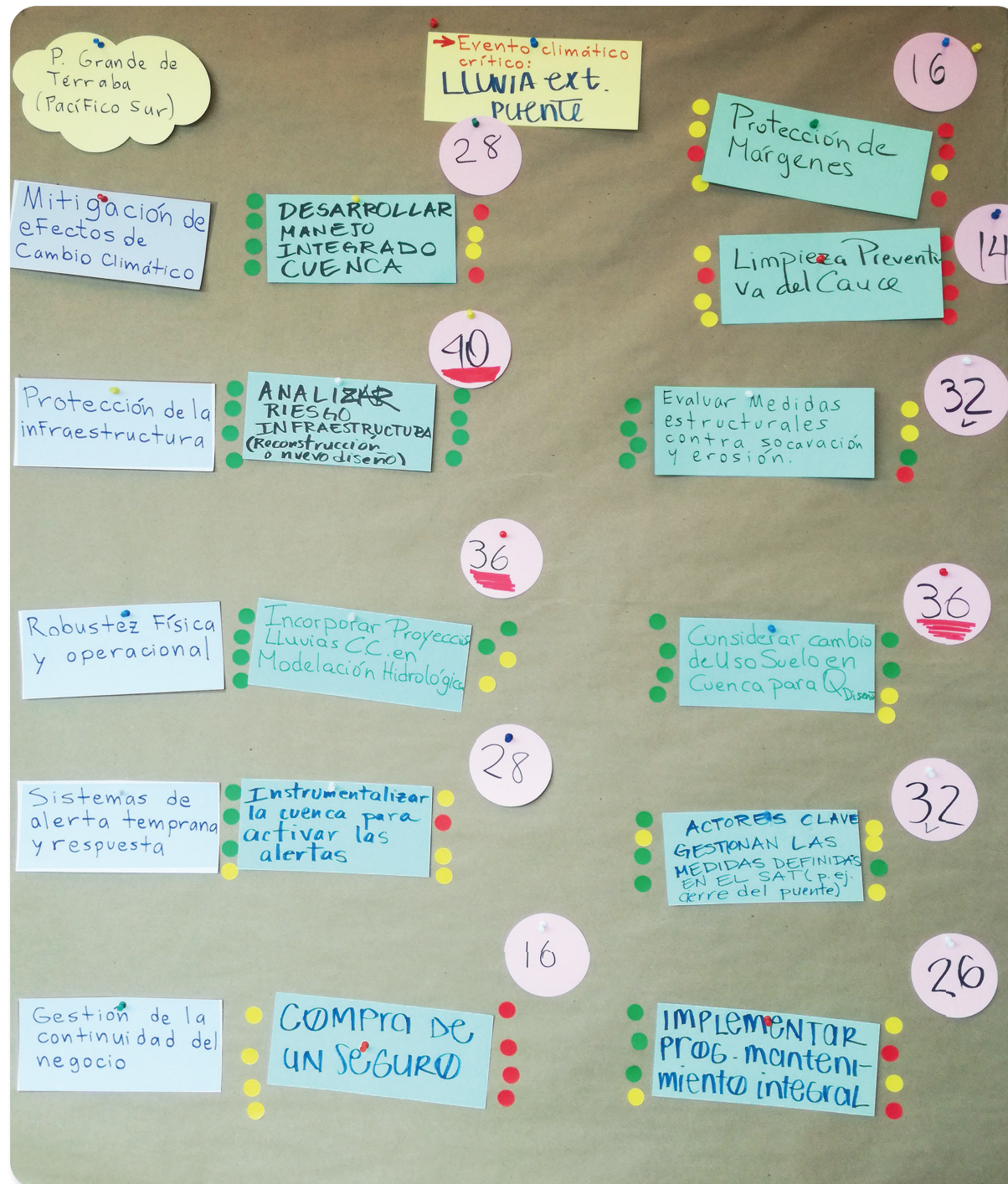


4.4.3 Hints for running the session

Session	Content
Input/presentation	<ul style="list-style-type: none"> ▶ Present the PPT 4.4. Slides may need to be customized for each specific training set-up.
Exercise: Adaptation assessment (steps 1, 2, 3a, and 4 of the Participant Handbook)	<ul style="list-style-type: none"> ▶ Case work on climate screening and scoping; ▶ Divide participants into groups (max. 6 people), ▶ Introduce participants to the exercise, following indications of steps 1, 2, 3.a, and 4 the Participant Handbook; ▶ The information to be used should be based on realistic climate information OR the Metropolis Case Study; ▶ Invite each group to first select a moderator, a card writer, and a presenter of final results.
Optional: Conduct an economic analysis of the adaptation options (step 3.b of the Participant Handbook)	<ul style="list-style-type: none"> ▶ Case work on climate screening and scoping; ▶ Divide participants into groups (max. 6 people). ▶ Introduce participants to the exercise, following indications of step 3.b the Participant Handbook; ▶ The information to be used should be based on realistic climate information OR the Metropolis Case Study; ▶ Invite each group to first select a moderator, a card writer, and a presenter of final results.
Presentation of results	<ul style="list-style-type: none"> ▶ Invite each group to present their results, monitoring thoroughly the available time.
Discussion/reflection	<p>Open discussion in plenary. Possible reflection questions:</p> <ul style="list-style-type: none"> ▶ What are the major challenges and risks during the process of identifying adaptation options for infrastructure projects? ▶ Which elements are essential for an integrated adaptation strategy for an infrastructure project? ▶ Which tools for selecting adaptation options for the project design and implementation work under real conditions? ▶ Which role plays Risk Assessment as a Climate Service Product for decision making in the process of prioritization the adaptation options?

Example of final results

Figure 3.4.3 Example of final results, using coloured dots for the voting (ToT Costa Rica 2019)





4.5 Implementation



4.5.1 Learning objectives

- The trainee understands why climate proofing does not end with the identification or rejection of adaptation measures, but the integration of these into the project design and operation plan for implementation.
- The trainee is able to define the roles of key stakeholder groups for successful implementation of the climate proofed project.
- The trainee is aware of complementary capacity development measures which facilitate the implementation of the project and coordination among key stakeholders.



4.5.2 Running the sub-module

Time consideration (min)	Input/presentation	Exercises/case work	Presentation of results	Discussion/reflection	Total
	25	90	20	25	160
Overview & sequence	<ul style="list-style-type: none"> ▶ Presentation by trainer (25 minutes); ▶ Group work (90 minutes); ▶ Presentation of results (20 minutes); ▶ Discussion/reflection (25 minutes). 				
Material	<ul style="list-style-type: none"> ▶ PPT Module 4.5; ▶ Hand-out of real case example OR Metropolis Case Study. 				
Preparations	<ul style="list-style-type: none"> ▶ Prepare input; ▶ Prepare exercise, including the matrixes on pin boards; ▶ Transfer learning goals, instructions for exercises, and key messages to flip chart. 				
Key messages	<ul style="list-style-type: none"> ▶ Considering needed resources and identifying enabling conditions is key for a successful implementation; ▶ Capacity development targets both the personal, institutional, and society levels. 				

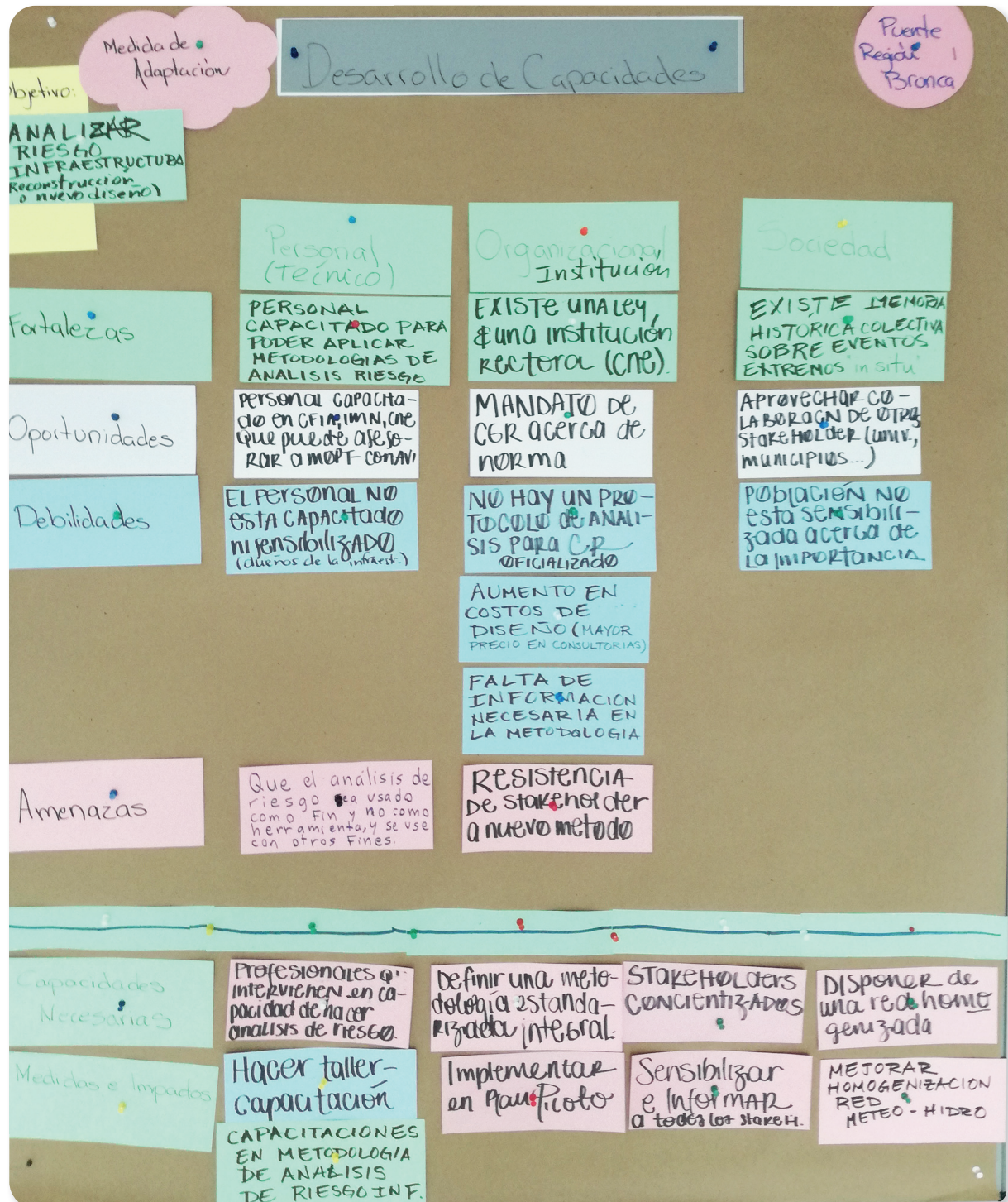


4.5.3 Hints for running the session

Session	Content
Input/presentation	▶ Present the PPT 4.5. Slides may need to be customized for each specific training set-up.
Exercise: Develop a project-focused capacity development strategy	<ul style="list-style-type: none"> ▶ Case work on capacity development; ▶ Introduce participants to the exercise, following indications of the Participant Handbook; ▶ The information to be used should be based on realistic climate information OR the Metropolis Case Study; ▶ Invite each group to first select a moderator, a card writer, and a presenter of final results.
Presentation of results	▶ Invite each group to present their results, monitoring thoroughly the available time.
Discussion/reflection	<p>Open discussion in plenary. Possible reflection questions:</p> <ul style="list-style-type: none"> ▶ What was the most challenging part of this task? ▶ What kind of information is needed to perform this task? ▶ What kind of stakeholders should be invited to this assessment? ▶ What are key points to consider when wishing to implement a capacity development strategy?

Example of final results

Figure 3.4.4 Example of final results of capacity development analysis (ToT Costa Rica 2019)



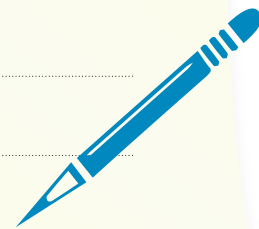


4.5.4 Take away messages

- Establishing implementation arrangements is a requisite to ensure the effective implementation of the identified adaptation option(s).
- Capacity development at individual, organizational and institutional level are needed to improve sector crosscutting cooperation and a better understanding of the need for climate proofing infrastructure projects and climate service products for decision making during the process.
- Upscaling lessons learnt from project to policy level facilitates innovation for new cooperation models.

4.5.5 Personal notes

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4.6 Monitoring and reporting on a climate resilient infrastructure project



4.6.1 Learning objectives

- The trainee is aware of the importance and challenges of monitoring adaptation measures of infrastructure investments.
- The trainee understands how to identify indicators for monitoring and provide recommendations for transparent reporting.
- The trainee is able to identify a monitoring framework for public infrastructure investments.



4.6.2 Running the sub-module

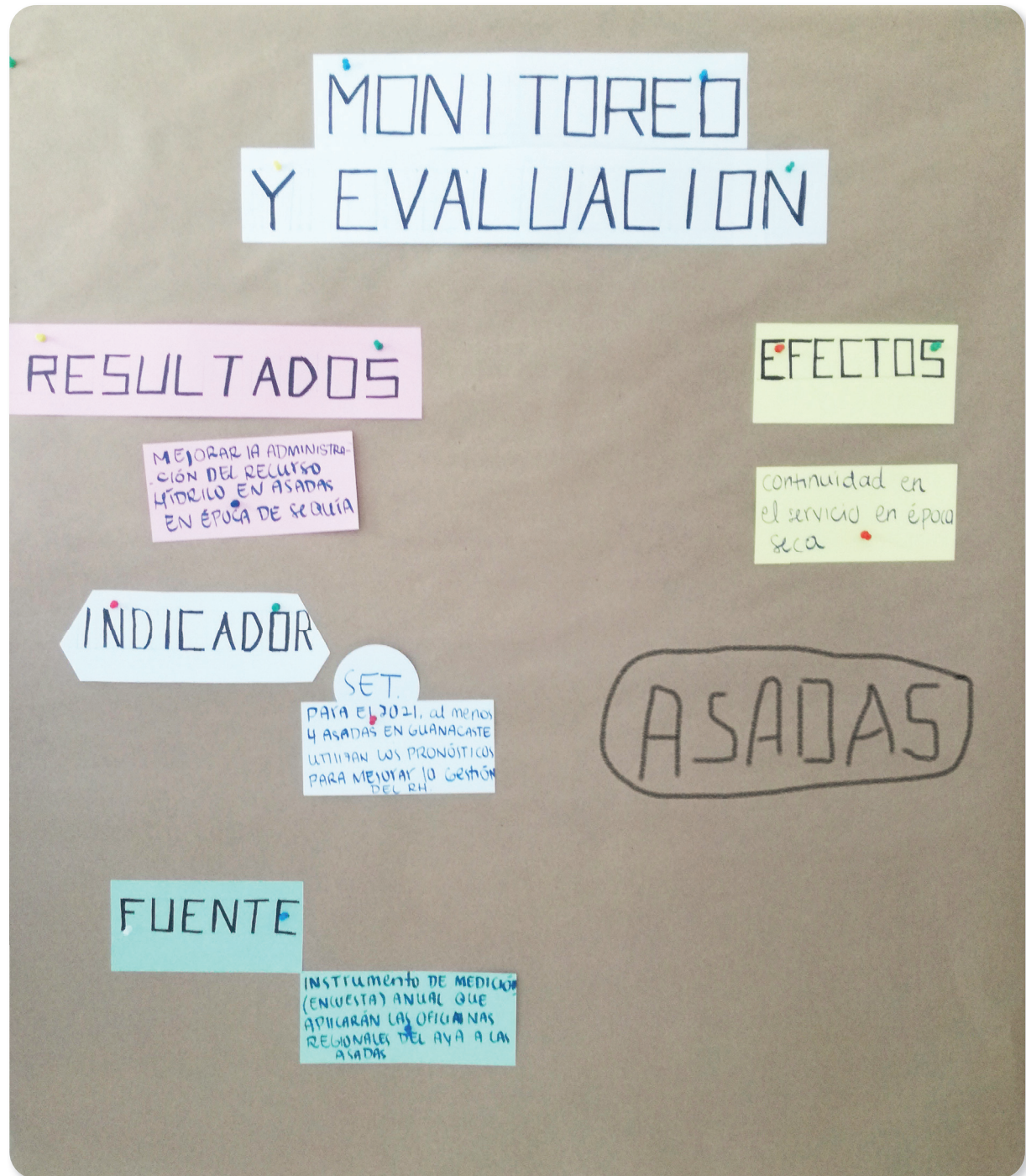
Time consideration (min)	Input/presentation	Exercises/case work	Presentation of results	Discussion/reflection	Total
	45	120	20	25	210
Overview & sequence	<ul style="list-style-type: none"> ▶ Presentation by trainer (45 minutes); ▶ Group work on developing a results framework (120 minutes); ▶ Presentation of results (20 minutes); ▶ Discussion/reflection (25 minutes). 				
Material	<ul style="list-style-type: none"> ▶ PPT Module 4.6; ▶ Hand-out of real case example OR Metropolis Case Study. 				
Preparations	<ul style="list-style-type: none"> ▶ Prepare input; ▶ Prepare exercise, including the matrixes on pin boards; ▶ Transfer learning goals, instructions for exercises, and key messages to flip chart. 				
Key messages	<ul style="list-style-type: none"> ▶ M&E for adaptation faces a number of challenges, being some <ul style="list-style-type: none"> • the inexistence of always valid metrics to measure adaptation, • long time horizons regarding possible impacts, • uncertainty in climate and socioeconomic developments, • and the complexity of understanding all factors leading to climate risk. 				

4.6.3 Hints for running the session

Session	Content
Input/presentation	<ul style="list-style-type: none"> ▶ Present the PPT. Slides may need to be customized for each specific training set-up.
Exercise: Develop a results framework	<ul style="list-style-type: none"> ▶ Case work on developing a results framework; ▶ Introduce participants to the exercise, following indications of the Participant Handbook; ▶ The information to be used should be based on realistic climate information OR the Metropolis Case Study; ▶ Invite each group to first select a moderator, a card writer, and a presenter of final results.
Presentation of results	<ul style="list-style-type: none"> ▶ Invite each group to present their results, monitoring thoroughly the available time.
Discussion/reflection	<p>Open discussion in plenary. Possible reflection questions:</p> <ul style="list-style-type: none"> ▶ Why is it relevant to have a well-developed M&E system accompanying adaptation projects? ▶ Why is it important to formulate outcomes and outputs, apart from long-term adaptation impacts? ▶ What are the challenges when formulating indicators? ▶ What are key stakeholders and key aspects to ensure that enough data is available to measure indicators? ▶ Which role does the User Interface Platform for Climate Services play to eventually provide data for M&E?

Example of final results

Figure 3.4.5 Example of final results (adapted methodology; ToT Costa Rica 2019)





4.6.4 Take away messages

- M&E is more than a 'nice-to-have': it is key to measure the impact of adaptation efforts over time and therefore demonstrate results to investors, to steer activities, for learning, and finally for international reporting framed in the Paris Agreement.
- M&E for adaptation faces a number of challenges, being some the inexistence of always valid metrics to measure adaptation, long time horizons regarding possible impacts, uncertainty in climate and socioeconomic developments, and the complexity of understanding all factors leading to climate risk.
- Trickle long-term adaptation impacts of adaptation measures to results chains and therefore outcomes and outputs helps to explain intermediate stages towards long-term impacts.
- Indicators are ways to measuring the progress and progress in your project towards achieving its outputs and outcomes. This is why they should meet the SMART criteria in order to be qualitatively relevant to measure outcomes and outputs.



4.6.5 Personal notes

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Deutsche Gesellschaft für
Internationale Zusammenarbeit (GIZ) GmbH
Registered offices
Bonn and Eschborn, Germany
Friedrich-Ebert-Allee 36 + 40
Germany
T +49 228 44 60-0
F +49 228 44 60-17 66
E info@giz.de
I www.giz.de

Dag-Hammarskjöld-Weg 1 - 5
Germany
T +49 61 96 79-0
F +49 61 96 79-11 15

