NOMMET Manual

Welcome to NOMMET! This manual lays out the key features and information on how to use NOMMET and tailor it to your needs.

What is NOMMET?

NOMMET is the NOn-verbal Mental Model Elicitation Tool developed by Dr. Karlijn van den Broek & Dr. Helen Fisher at University of Heidelberg, and Joseph Luomba, researcher at Tanzania Fisheries Research Institute. It is designed to capture mental models, or internal representations that describe an external environment. The external environment can be any type of system that consists of factors and causal links between those factors. NOMMET creates mental models of the environment by having the respondent organizing relevant factors and linking them. The example below illustrates an image of a mental model of the drivers of the changes of the Nile perch stock. It shows how this fisher believes the strongest factor of changes is fishing in breeding grounds (thick arrow), which is influenced by climate change, which in turn also is perceived to have a direct influence on the Nile perch stock, as well as the use of illegal gear.

Figure 1. Example of a mental model created with NOMMET. The figure shows the mental model of a Tanzanian fisherman on the target variable, the Nile perch stock.

Why to use NOMMET?

In contrast to other mental model elicitation methods, NOMMET uses a fully computerized approach that allows rapid collection of large samples. NOMMET also uses a fully standardized approach by putting in the relevant factors that your respondent will use to draw up their mental model. NOMMET hence gives you the unique benefit of comparing the mental models across respondents or groups of respondents such as stakeholder groups. NOMMET is the first mental modelling tool to allow users to uncover differences in mental

models which may keep stakeholder groups from addressing challenges jointly and effectively (van den Broek, 2018).

Compared to interviewing techniques, NOMMET allows respondents to draw more complex mental models, thereby giving a more detailed insight into their understanding of a system (van den Broek et al., forthcoming). This tool can be used to map perceptions of the drivers, and consequences of a phenomenon separately, to ease the cognitive demands on the respondents.

Moreover, by relying solely on intuitive icons to display the relevant factors, NOMMET can be used without relying on respondents' literacy. NOMMET also does not require internet access, meaning you can use this tool to assess mental models of rural communities as well as other relevant stakeholders everywhere. Indeed, this tool has been validated with rural fishing communities, demonstrating both convergent and external validity (van den Broek et al. forthcoming).

In short:

- A standardized tool – allows for comparing mental models
- Suitable for large sample sizes
- Does not require respondents' literacy
- No internet connection required during sampling
- Can be tailored to your needs.

Tailoring NOMMET to your needs.

NOMMET allows you to populate the tool with factors that are relevant for your project. These factors can be generated by your mental model target group, for example through short interviews or surveys (e.g. What factors do you think drive…, what are the consequences of …). Alternatively, you may be interested to see if your target group would make certain connections based on an existing set of factors. These factors may be informed by pre-existing knowledge of a system, i.e. to assess if you target group can draw up the 'correct' dynamics between factors. Furthermore, you can replace the audio instructions and videos with your own files to adapt the instructions to your needs, or to translate it to the relevant language.

With NOMMET you have the option to map the perceptions of the drivers and consequences of a phenomenon separately. However, these mapping screens are not limited to mapping drivers and consequences as you can decide for each screen where (or whether!) to place your target variable. This means that you can map any aspects of any system (e.g. network of actors, dynamics of an ecosystem).

How to use NOMMET?

To get started using NOMMET, follow eight simple steps.

1. Generate a list of relevant factors for the mental model subject.
2. Turn these factors, as well as your 'target variable' (if applicable) into images (or images with text).
3. Create a video that explain the meaning of each image (this is easily done with PowerPoint: https://support.office.com/en-

us/article/turn-your-presentation-into-a-video-c140551f-cb37-4818-b5d4-3e30815c3e83)

4. Extract the audio files from this video for each image
   (if using PowerPoint: https://support.office.com/en-us/article/extract-embedded-media-from-a-presentation-audio-or-video-f773d119-0fb3-4884-a18a-29573ac97b25)
5. Upload these files under *upload files*
6. Set-up the files under *settings.*
   Here you can also choose whether you want to map both drivers and consequences, whether to include positive and negative arrows, where to place the target variable.
7. Enter a session number/comment as desired
8. Press start and hand-over the tool to your respondent.

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References

van den Broek, K.L. (2018). Illuminating divergence in perceptions in natural resource management: A case for the investigation of the heterogeneity in mental models. *Journal of Dynamic Decision Making*, *4*, 2-2.

van den Broek, K.L., Luomba, J., van den Broek, J. & Fischer, H. (forthcoming). Introducing and Validating a Nonverbal Mental Model Elicitation Tool.

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