PARES Resilience Case Studies

Case Study Title: **Sierra Leone, Malaria, Universities as enablers, Science Shops**

Country/location: Sierra Leone, Kailahun District

Crisis/challenge type: Malaria

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PARES Resilience Pathways illustrated by this case study:

- ***Social Relations & Structures:*** working with trusted traditional leaders alongside all community members
- ***Operational Systems:*** two-way communication between university scientists and community members, local resource mobilisation
- ***Learning & Capabilities:*** University researchers facilitate equitable, hands-on learning to enable social learning about malaria

Recommended Actions

Communities: request work along these lines

Government: incorporate these and other community findings in national planning against malaria

NGOs and health program implementors: take note of the way in which joint work on discovering pathways of malaria infection – trapping mosquitoes in households, tracing egg laying and larval locations, hatching mosquito larvae to identify Anopheles (the malaria vector), and testing to show how many trapped malaria mosquitoes carried Plasmodium falciparum – changed local understanding of the malaria risk, and that this was linked to changed local response (actions to cover open clean water sources to prevent egg laying, attention to whether local plant poisons were active against larvae, more assiduous use of bed nets to protect children from a known risk).

Funders: support a wider roll out of this technique of engaging local action against malaria

Data from which this case analysis is drawn

Primary data 1: measurements (trapping, identification of species, observation of larval metamorphosis, determination of Plasmodium infection through molecular assay [LAMP], and eventual in situ determination of Plasmodium infection using the T-Cup system).

Primary data 2: Respondent knowledge of traps and problems with traps [Science Shop]. Current levels of village knowledge and willingness to turn knowledge into action [Science Shops]. Respondent surveys of prior knowledge on malaria transmission process including species recognition tests [Interviews].

Secondary data include papers on mosquito control, use of LAMP etc

Resilience Pathway Key Message

University researchers can enable transformative social learning to respond to acute health challenges if they interact equitably with local people to pool knowledge and co-create locally sustainable solutions. Science shops provide a mechanism for achieving this.

Resilience Pathway Description

Context: recognition that malaria is a major challenge, willingness to improve knowledge concerning the malaria risk process through direct observation

Mechanisms of action: seeing is believing. Communities had a general understanding of the malaria challenge but there were knowledge gaps. Our mechanism for change is that exploring these gaps in a hands-on way would improve willingness and capacity to do something about the problem.

Outcome: communities pooled available knowledge on the problem and expanded their understanding, and this drove an enhanced willingness to find and implement solutions

Detailed Explanation of Resilience Pathway

Malaria is endemic in Sierra Leone and people see it as a major problem. Communities engaged by university researchers (from Eastern Technical University, Kenema and from Wageningen University, The Netherlands) were willing to commit to better malaria control through participating in an exercise to trace out the way the disease threat works.

The main mechanism is that effective knowledge for disease control (specifically malaria) requires a comprehensive engagement with the process of disease transformation. This involved several hands-on activities in communities. The first was a Science Shop understanding of how traps work (but sometimes fail)/ This then supported a good understanding of the trapping part of the mosquito project which was successfully concluded. Community participants were then active in identifying sites of larval reproduction, and observing how larvae turn into mosquitoes. The community then followed the LAMP process for identifying mosquitoes carrying the malaria parasite, and examined and discussed the results. This supported local action to restrict larval reproduction (by covering buckets and wells, for example) and community involvement in some initial attempts to find local plant poisons to restrict larval reproduction.

Intermediary outcomes: Communities felt engaged and were motivated to participate over an extended period by a belief that they were making progress towards solving the problem of malaria using their own enhanced knowledge as a base

Health-related outcomes: communities restricted open clear water sites available for Anopheles reproduction by covering water buckets and wells. They became aware that not all mosquitoes are malaria mosquitoes, and that not all malaria mosquitoes carry malaria. This strengthened the feeling (expressed in feedback sessions) that pressure to reduce the malaria threat is both feasible and something over which communities have some control. Communities want to continue the process of testing local plant poisons for larvicidal activity. Communities expressed satisfaction with what they had learned and wanted the project to continue. Feed-back showed that lessons had been retained, especially by school-age children.