Interest group meeting:

Speeding up technology transfer through open data: how to identify environmental pattern similarities in developing countries

Time: Tuesday, 22 April 2014, 12:00-13:00   **Venue: room "Queen Juliana"**

Session lead: Dr. Karl. G. Gutbrod. Rapporteur: John Gordon Social Media: Thembani Malapela

Objective :

1. to determine interest in this type of this concept.
2. (if there is sufficient interest), to define stakeholders interested in applying the approach.
3. to determine first steps – such as ways of collecting inventory of open data sources.
4. (in the best case) to make suggestions for a test case (crops / countries).

1. Introduction by Karl Gutbrod, based on printed handout.
2. Discussion of 5 premises.

    1. It is possible to identify environmental pattern similarities between any country and region in the world by means of weather and soil data.

        This premise is validated by all participants.

        Several comments were made, that this process should be applied rather to smaller crops and technology packages, to give them more potential and profitability, considering that big crops and technologies already have substantial investment available to them. There are 2 ways in which this could be realized:

        1. Technology generators for small crops (breeders, agronomists, processors, etc.) can find other potential areas with similar environment to profitably produce and market their crops, and thereby find new markets.
        2. Regions looking for higher value crops and technologies can search for other similar environmental regions where such crops and technologies are being already produced.

        There was a general sense that open data environmental data could be an enabler giving "smaller crops" a better chance, by giving them a better decision platform.

    2. Weather and soil data are now available globally and in sufficient precision to permit precise recognition of environmental similarities and suitable cropping patterns.

        This premise is validated for weather data from simulation databases, when a typical cropping situation is envisaged for areas of 50x50 km, in some continents down to a 3x3 km resolution. For local situations such as mountain valleys and seasides, more local resolution is needed, but the available data are good to allow good definition of environmental pattern characteristics.

        For soil data, several databases are available or could be made accessible. Difficulties will lie in the different classifications (FAO, USDA, EU, German, etc.): there will be a substantial job of data matching.

        The premise can be validated under 3 assumptions:

        1. The soil data from local country organisations can be made available over time, or

2. Data from local soil databases can be matched with major soil classification standards through post-processing of datasets, or,

3. If no suitable soil data are available, a reverse approach could be used, to define the typical environment by weather patterns, then look for prevailing soils in the comparison area, and finally investigating the target area to see how much are with matching soil classification can be found. This approach would still be much less resource consuming than overall soil mapping in areas with no (available) mapping.

3. Identification of high yield/ quality/ efficiency technology packages (cultivars, seed, fertilizer, crop protection, irrigation) is possible.

    This premise is validated under the assumptions that :

    1. Data from local soil databases can be matched with major standards through post-processing;supporting databases or;

    2. Local institutions are available, which can provide the necessary information.

    3. an additional premise is introduced (see 5.)

4. Assessment, choice, testing and transfer of the suitable technology packages will speed up the adoption process and rentability, and is therefore desirable.

    Participants suggested that this premise needs to be separated into 2 steps:

    Validation – which is possible given a functioning local assessment system (in the form of agricultural research) and user testing, and the following step number 5

5. Economical and social impact assessment: Technology packages tested locally will have to undergo acceptance testing, through various local stakeholders and (generally well known) methods. This includes the assessment of added value, investments needed (e.g. existence of available supply chains for crop processing and marketing), change over costs and other impacts.

    This premise will be dependent on local economical, political and social environment. In countries with functioning political system, all stakeholders (suppliers, producers, processors, consumers, administration, people affected, others) participate in this process , which is usually applied to all new technologies (e.g. introduction of cell phones, new crops, new methods of crop protection. etc.).

    The outcome of this process is not foreseeable at the level of open data. Assuming functioning political and economical systems, the local stakeholders should be able to accomplish this in a relatively "efficient" way (in the sense that the number of successes and economical /social benefits is maximized relative to failures and losses.

6. Sufficient open data are available to apply this approach in various places.

    This premise seems to be acceptable for weather worldwide, for soils and many regions and for crops and technologies for some regions. This seems to be enough to get started.

3. Closing remarks: the discussion showed that he process is likely to work, especially if 1 additional step is incorporated into the process mapping.
    The vision of this process is that global institutions can act as enabler to (create systems which) deliver such data. From step 3 onwards, local institutions take over in the information collection and exchange process, technology assessment (step 4) and social impact validation (step 5).

Public institutions can make a large contribution to the success of this approach by facilitating data access. Further success will have to be proven by initiatives actually developing from this process.