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Impediments to the Use of Remote Sensing and Related Information in International Development

In a 2016 paper (Ryerson and Haack) we discussed the important uses of remote sensing to provide reliable spatial information at every stage of development assistance. We then identified what we saw as eight impediments to the use of remote sensing in assisted development. The listed eight impediments were all expressed as something is missing:

- Senior political support;
- A geospatial strategy;
- Supporting data policies;
- Appropriate institutions;
- Appropriate staff;
- Appropriate management;
- User awareness/user capabilities; and, lastly
- Data.

Now, almost ten years later, we thought it would be useful to re-assess the situation. Land surface spaceborne remote sensing has now been available for over fifty years and in many cases its use is no longer seen as something special. But is it being used as effectively as it might be and if not, why not?

Senior political support. Senior political and senior bureaucratic support is still needed to secure the funding for imagery and supporting geospatial information as well as for the required strategies, policies, and the necessary institutions. This support is needed in both aid recipients as well as in aid agencies. The importance of geo-information was recognized and articulated in the geo-information strategy proposed by USAID in 2024 <https://usgif.org/usaid-launches-a-geospatial-strategy/>.

A geospatial strategy. It does appear that recipient countries are becoming more supportive of the use of imagery and an overarching geospatial strategy is often linked to success. That success seems to come where a single spatial data clearing house or a national center to coordinate and share spatial data from multiple ministries is established.

Supporting data policies. Simply put, the data policy must meet often conflicting demands – from security to resource management and environmental assessments. Until recently, data policy was seen as less of an impediment as the value of data sharing was becoming better understood. Re-

cently, however, it seems that many countries have stepped back from allowing easy access. We suggest that the retreat from the concept of Globalization seems to have negatively impacted attitudes about the usefulness and importance of easy access to and sharing of geospatial information including remote sensing data.

Appropriate institutions. To establish data sharing, appropriate institutions are needed to effectively create, manage and disseminate the information. To carry out these tasks requires hardware and software including data storage/ computers and image processing software. These systems can often be expensive and often have annual fees associated with their use.

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As we discussed in our 2016 paper, remote sensing data and derived spatial information are capable of greatly assisting decision makers and scientists in analysis of multiple issues and creation of appropriate policies and regulations. These activities can be within governmental, university or private sector institutions. However, as is unfortunately evident in multiple locations and organizations, good information does not always result in good decisions for multiple possible reasons. As stated in our paper “one cannot take an approach that works in one country and simply apply it elsewhere without taking into consideration the local situation.”

Appropriate staff. The fifth impediment discussed in 2016 was the lack of appropriate staff in both donor and aid-receiving countries. In an assessment of over 200 projects Ryerson and Quiroga (2000) identified staff characteristics in successful recipient projects. While these characteristics,

ranging from experience with the data to close association with experienced people in more developed countries, are still much the same, there are some important shifts currently. Today some countries have sufficient internal remote sensing training capabilities either with well-established centers or at national universities. Others still require external training options and those have been found to have limited success. In some cases, those trained abroad stay where they were educated, while others come home with their new education and experience only to be promoted into areas other than geo-information. Still others are hired by the private sector or international agencies to meet the apparent quotas these agencies seem to have to hire people from developing countries. Another complicating factor in staffing is the growing interest in research in the scientific or technical realm of remote sensing and what we see as a lower level of interest in applications. Part of this is spurred by the higher status of those doing and publishing research compared to those applying the technology. One solution is to encourage papers at conferences that are on applications, not just basic science.

Appropriate management. The process of management in general is better understood today than it was even ten years ago. However, as noted in our 2016 paper, the management of a technical activity that creates and uses information to serve as well as monitor senior decision-makers across government is not a simple task. It requires technical expertise and the ability to interact with senior levels of government in what can become an adversarial situation. At the same time, one must also work with a variety of donor agencies. Further complicating the situation is that some of both donors and aid recipients will not want a transparent and rigorous assessment of the results of their activities.

User awareness/user capabilities. The lack of user awareness was often cited as an impediment to the use of geospatial information and associated technologies in the development process. However, Google Earth and similar services have continued to popularize the use of geospatial data as both a source of information and as a tool to organize information. In addition, there is easy on-line access to studies and examples of the application of remote sensing and associated technologies to a wide range of issues. As a result of these factors the use of geo-information has exploded. While Google Earth has helped “spread the word,” some confusion has been introduced. All too often senior management in government seem to think that Google Earth is all that is needed by way of imagery – and that one need not pay for data. As noted above, there are also concerns about national or border security, leading to resistance from those concerned with such issues. Another limiting factor is that many potential users will accept that the technology has value only when it has been shown to work in their situation. Related to that concern is the need to ensure that the accuracy of informa-

tion derived from remote sensing data meet the client’s requirements. Another approach that we think has value is the introduction of in-country training seminars or workshops showing relevant case studies.

Data. Data and basic information were left to the last in our original list because data was and remains a critical issue. As stated in 2016 data issues are a “a reflection of inadequate data policies, licensing agreements, user awareness, and cost – not lack of data.” In fact, today the amount of data is overwhelming. Of course, for some types of remote sensing data, cost of acquiring and handling data can be significant

Our conclusion is that remote sensing and geo-information is not as widely used in international development as it might be, but the situation is better than it was in terms of access to data, available technology and information on applications. The major issues remain associated with policies, strategies and the lack of appropriate institutions to support the use of the technology in international development. Whose role is it to improve the situation by fostering the development of workable policies? Perhaps this is a role for organizations like ISPRS and its members such as ASPRS and the Canadian Remote Sensing Society.

References

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