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Viewpoint

Is there a need for an African space agency?

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ABSTRACT

Over the past few years, the view has been expressed in some quarters that Africa should establish a continental space agency. Various arguments are advanced for this, but they are generally not compelling and rely mostly on pointing to the existence of other regional space cooperation organisations, or to benefits that are debatable. The article considers these arguments and concludes that there is an insufficient case for the establishment of an African space agency at this point in the development of the space arena in Africa. Instead, greater emphasis should be placed on strengthening nascent national space programmes, fostering intra-regional cooperation and raising the profile of space activities in Africa's national and regional political structures.

1. Introduction

Since the early 2000s the space arena in Africa has evolved considerably, with the emergence of a number of national space programmes and dedicated national space agencies in Algeria, Nigeria and South Africa. Other countries in Africa are expanding their capabilities to use space-derived geospatial data, and are beginning to consider coordinating their national space activities, which is usually a precursor to establishing a more structured mechanism, such as a space commission or a space agency. Against this backdrop, the proposal to establish an African space agency has been made in a number of conferences (e.g. [1]), papers and online discussion fora.

In the Abuja Declaration [2], issued at the end of the Third African Union (AU) Conference of Ministers in charge of Communications and Information Technologies, held in August 2010 in Abuja, Nigeria, the ministers requested the AU Commission to conduct a feasibility study on the establishment of an African space agency, taking into account existing initiatives, and to develop an African space policy in cooperation with the seven African regional economic communities, the United Nations Economic Commission for Africa (UNECA) and the International Telecommunication Union (ITU).

The announcement generated a flurry of media interest. About a dozen articles were posted online shortly after the announcement. A number of commentators (mostly not from the African professional space community) were quoted as supporting this initiative. Others were critical, but seemingly unaware of the many benefits of space activities for Africa's development. There is even a website (http://africanspaceagency.com/) that has popped up on the internet, with only a landing page – and no more – purporting to be the website of the African Space Agency.

In a joint statement issued following the High Level Political Meeting on Space and Africa on 15 September 2010, Vice-President Antonio Tajani of the European Commission and Commissioner Jean-Pierre Ezin of the African Union Commission said:

> The establishment of an African Space Agency would be a positive development, indicating a willingness of African nations to speak with one voice for the benefit of the whole continent. An African Space Agency could provide significant added value by leading and coordinating African activities in space and contributing to training and capacity building. Such an agency could, at least in its initial phase, focus on practical areas capable of producing benefits for the African citizen such as telecommunications and use of Earth observation data to monitor weather, environment and climate change [3].

Following the announcement in the Abuja Declaration, there were no further references to the feasibility study and as of this writing (February 2012), there has been no further announcement by either the AU or the ITU on this matter. But, with the holding of the 4th African Leadership Conference on Space Science and Technology for Sustainable Development in Mombasa in September 2011 [4] and the International Astronautical Congress in Cape Town in October 2011 [5], this issue has again appeared and the view has been expressed that the establishment of an African space agency is an inevitable consequence of current developments on the continent [6].

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This article examines some of the arguments for an African space agency. Although my paraphrasing of the arguments may not correspond exactly to the position of any one individual, it represents the essence of what has lately been maintained.

2. The argument of an existing example

In making the case for an African space agency, commentators often cite the example of the European Space Agency (ESA), claiming that creating a similar body in Africa will bring about a critical mass among the emerging space nations on the continent to mount a continental programme, and will also build capacity in those countries not currently involved in space activities.

This argument overlooks the fact that ESA came about through the merger in 1975 of two already existing European initiatives, the European Launcher Development Organisation and the European Space Research Organisation, both of which had been established in 1964. These precursor entities were technically focused and provided a platform for European actors to develop experience in multilateral cooperation in space activities *before* ESA was established.

It is worth noting that the countries that played a leading role in the creation of ESA (and its precursor organisations) had their own established national space programmes, with experienced scientists and engineers. In principle, those countries could have decided to continue pursuing their national space activities independently, but they decided that it was in their interest to cooperate with other strong partners in the region to create a critical mass that could compete with the space accomplishments of the then space superpowers, the USA and the USSR.

Even today many of the ESA member states have their own national space agencies and national space programmes. Until such time as there are established space programmes and capabilities in the different regions of Africa, and established modalities of space cooperation among those regions, it would be premature to discuss the creation of an African space agency.

3. The fostering competition argument

Another common argument for establishing an African space agency is that such an agency would foster intra-African cooperation, thereby accelerating the utilisation of space technology in Africa. While international and regional cooperation are clearly key factors in the development of any nation's space capabilities, does this mean that Africa needs to establish a regional space agency in order to promote this?

We are beginning to see the first intra-African space cooperation in the African Resource Management (ARM) satellite constellation project. This is an initiative of Algeria, Kenya, Nigeria and South Africa to establish a constellation of Earth observation satellites in which each country contributes one satellite to the constellation and has access to the other satellites in the constellation as well. The ARM consortium is, in principle, open to other African countries to join, although the modalities of participation still have to be decided, given that not all African countries would be interested or able to participate at the same level.

The ARM initiative was first mooted in 2000. Multilateral discussions began in 2005, the year of the first African Leadership Conference on Space Science and Technology for Sustainable Development (known in the space community as 'the ALC') [4], and it is worth noting that there has been a session dedicated to the ARM project at each of the four ALC conferences so far: in Abuja (2005), Pretoria (2007), Algiers (2009) and Mombasa (2011). To date Nigeria has already lofted its satellite (NigSat-2) as part of the ARM constellation. South Africa and Algeria are developing their own satellites to contribute to the constellation.

The ARM project appeals to the partner countries because they all see Earth observation as a key priority in their national space plans. They all intend to develop their own (and similar) Earth observation capability. The similar requirements, similar levels of capabilities and resources and the prospect of reduced revisit times over their national territories are compelling reasons for these countries to develop jointly a constellation of satellites. All of this came about without a continental space agency. Indeed, the first cooperative agreement between the governments of the ARM partner countries was concluded in 2009, before South Africa and Kenya had even established national space agencies.[1]

There are two key points here: first, for an emerging space country, even a comparatively simple cooperative project, such as ARM, which is a constellation of microsatellites, can take longer than a decade to develop. Second, the ARM initiative came about without a continental agency to drive it.

4. The argument of synergy

The "argument of synergy" maintains that, by combining the various small-scale activities on the continent, the combined effect will be greater than the sum of the separate parts.

International bilateral cooperation in space activities has well-known overheads [7]. In the case of cooperation among experienced partners these overheads are acceptable because cooperation brings about benefits that are indeed greater than the sum of the individual efforts.

However, in the case where partners are just starting to develop experience by conducting their own national programmes, the overheads and potential pitfalls of cooperation are far greater. In such a case it is difficult to see how a top–down approach of multilateral cooperation can lead to purposeful programmes that cannot be executed more effectively and efficiently among a few partners. So the argument of synergy works only up to a point.

The ARM project illustrates this. The ARM partners are all developing their satellites concurrently and cooperatively, but at the same time independently of each other. The partners retain technical autonomy and their satellites are not interoperable. Cooperation in the ARM project is at the level of agreeing on common priorities, common requirements (e.g. spatial, spectral and temporal resolution), data sharing policies, and so on. The partners are not (at this stage) involved in the design and manufacturing of each other's satellites.

Establishing a new continental space agency would also require a significant financial commitment from a number of African countries. Most African countries scarcely have the resources to plough into science and technology activities in general, let alone in the space domain. According to the UNESCO Science Report 2010 [8], South Africa leads the continent in terms of investment in R&D activities at 0.93% of GDP, compared to the global average of about 1.7%. The figure for other African countries is around 0.3%–0.4%. African countries scarcely have the funding to sustain their own national scientific entities, let alone to plough into an organisation based somewhere else.

Moreover, experience with African continental organisations has shown that the host country winds up shouldering the lion's share of the financial burden of sustaining such entities. Knowing this, which country would offer to host such an entity?

[1] The South African National Space Agency (SANSA) was subsequently established in December 2010. Kenya has started a process to work toward the development of the Kenya Space Agency.