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SPACE SCIENCE AS A TOOL FOR SUSTAINABLE DEVELOPMENT IN DEVELOPING COUNTRIES: CASE OF SENEGAL

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Introduction/background

The contribution of the peaceful use of space (Earth observation, satellite positioning and navigation, telecommunications and astronomy) to the development of nations is longer demonstrated. Indeed, in recent decades the various services offered by space have finally demonstrated that it is rather a tool for sustainable development.

Despite its importance, developing countries still fail to take full advantage of the services offered by the spatial sciences to bust their economy. The few services that these countries derived from spatial science are often imported and therefore not very adapted to the local context.

This situation results from the lack of human resources and the lack of knowledge of decision-makers of the potential of this science as a tool for sustainable development

Objectives

This presentation aims to share the experience of Senegal which for two years has been working hard to master this science and make the most profit for a better control of its natural resources, management of its natural disaster management and territory in short, a real lever for the development.

On the other hand demonstrate why the use of peaceful space is important for developing countries

And fuinally make recommendations on ways and means to better exploit space as a tool key for development especially in developing countries

Senegalese Context

Senegal is country where agriculture and mineral and fishery resources are the basis of the economy, the use of space sciences is a necessity for having reliable and up-to-date information which is the foundation of a successful planning

Senegal is often a victim of several threats whit disastrous consequences on his economy. Some exacerbated by climate change. The use of spatial data can largely help to prevent and manage these aleas.

Despite all the potential of spatial data in the development of the nations, our countries are often lacking qualified human resources resulting from a deficit of training structures in the field of space applications, access to data adapted in our context, a lack of political vision and strategy, and involvement of the decision-makers.

Space Science a Tool Key for sustainable development

Agriculture :

- Mapping of arable land
- Mapping of agricultural areas
- Monitoring of crops during the growing season
- Calculation of yields at the end of rainy season

Livestick :

- Monitoring the development of natural vegetation during the rainy season (growing season)
- Estimating the quantity and quality of the natural biomass at the end-of-season
- Mapping the spatial distribution of this biomass

Marine resources

- Tracking resources
- Marine monitoring

Mining resources

- exploration
- management of the environmental impacts of the exploitation

Flood

- Mapping of floody zones
- Helps policy maker to build sustainable cities
- Mapping of flooded areas

Coastal erosion

- Identification of erobible areas
- Monitoring the erosion

Soil salinity

- Mapping salinization risks
- Mapping and monitoring of salty soil

Bush fires

- Detecting active fire detection
- Maps of burned areas
- Estimation of burned biomass

Senegalese initiatives

- ✓ Development and implementation of a national geomatic plan (PNG) to promote development through the establishment of a geographic data infrastructure and capacity building of geomatics stakeholders
- ✓ Participatory and inclusive process of developing its space policy and strategy in line with the African Space Strategy of African Space Agency
- ✓ Construction of the first Senegalese Earth Observation microsatellite by the end of 2021;
- ✓ Project to build a microsatellite manufactoring assembly centre (M-AIT)
- ✓ Setting up a national scientific computing centre equipped with a supercomputer (HPC) which will allow to develop cobnsiderably our capacity in satellite data processing, especialy massive data
- ✓ Development of human capacities in space science and technology through the establisment of a competence centre in space science

Conclusion

The mastery of spatial technologies is currently a major challenge for all states. Given the extent of global challenges such as climate change, water access, pollution, food security, we are called to work together hand in hand, for a better use of space.

For this, we need:

- ➢ Better collaboration between developing countries which have the same problem and need same solutions
- ➢ Collaboration between developed and developing countries in capacity building to strengthen capacity of developing countries in the use of spatial data to product services
- ➢ Work to make decision-makers more aware of the potential of spatial data in their development policy
- ➢ Strengthen the private sector, including start-ups in the production of services from spatial data

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