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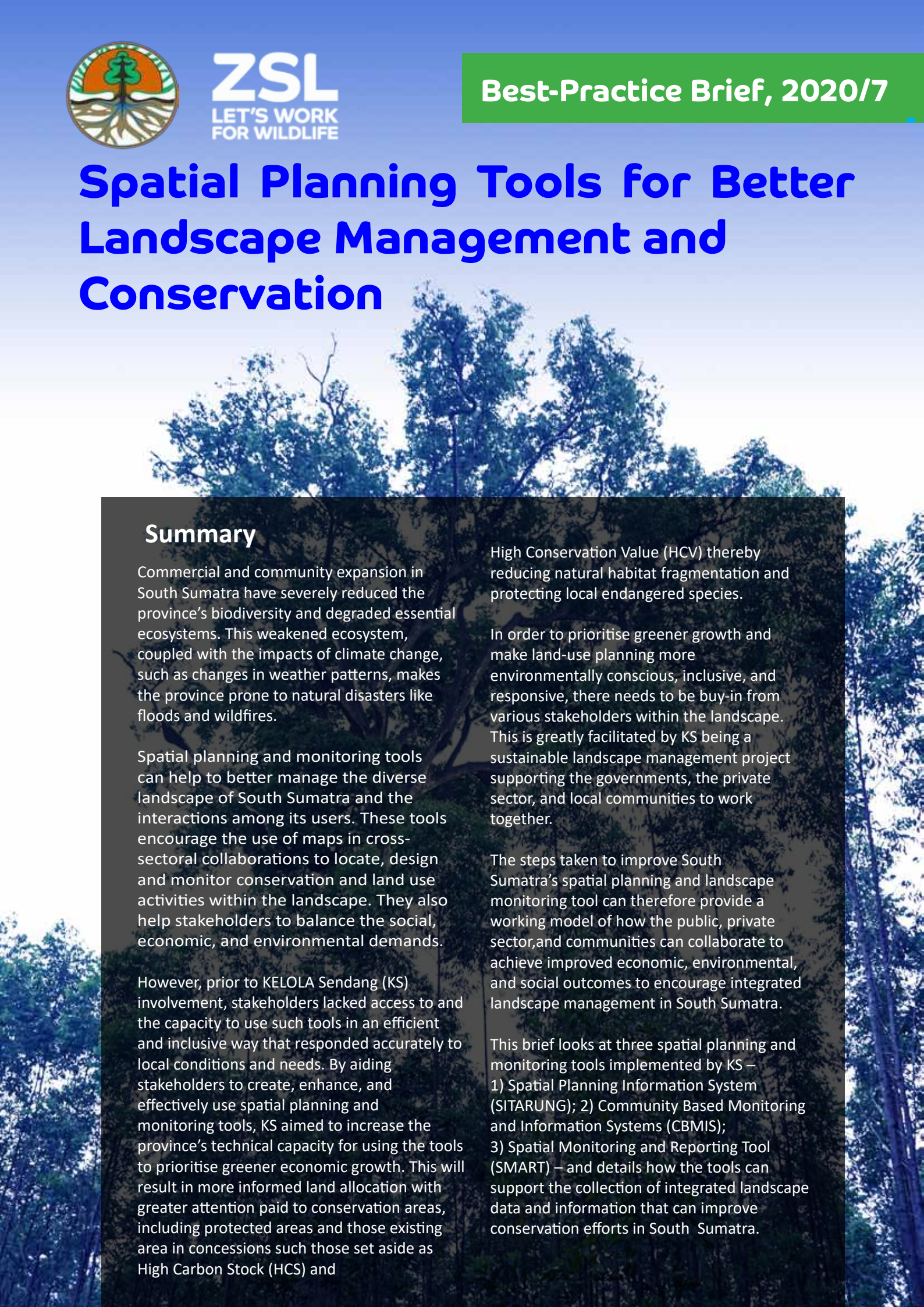
Spatial Planning Tools for Better Landscape Management and Conservation



Summary

Commercial and community expansion in South Sumatra have severely reduced the province's biodiversity and degraded essential ecosystems. This weakened ecosystem, coupled with the impacts of climate change, such as changes in weather patterns, makes the province prone to natural disasters like floods and wildfires.

Spatial planning and monitoring tools can help to better manage the diverse landscape of South Sumatra and the interactions among its users. These tools encourage the use of maps in cross-sectoral collaborations to locate, design and monitor conservation and land use activities within the landscape. They also help stakeholders to balance the social, economic, and environmental demands.

However, prior to KELOLA Sendang (KS) involvement, stakeholders lacked access to and the capacity to use such tools in an efficient and inclusive way that responded accurately to local conditions and needs. By aiding stakeholders to create, enhance, and effectively use spatial planning and monitoring tools, KS aimed to increase the province's technical capacity for using the tools to prioritise greener economic growth. This will result in more informed land allocation with greater attention paid to conservation areas, including protected areas and those existing area in concessions such those set aside as High Carbon Stock (HCS) and High Conservation Value (HCV) thereby reducing natural habitat fragmentation and protecting local endangered species.

In order to prioritise greener growth and make land-use planning more environmentally conscious, inclusive, and responsive, there needs to be buy-in from various stakeholders within the landscape. This is greatly facilitated by KS being a sustainable landscape management project supporting the governments, the private sector, and local communities to work together.

The steps taken to improve South Sumatra's spatial planning and landscape monitoring tool can therefore provide a working model of how the public, private sector,and communities can collaborate to achieve improved economic, environmental, and social outcomes to encourage integrated landscape management in South Sumatra.

This brief looks at three spatial planning and monitoring tools implemented by KS – 1) Spatial Planning Information System (SITARUNG); 2) Community Based Monitoring and Information Systems (CBMIS); 3) Spatial Monitoring and Reporting Tool (SMART) – and details how the tools can support the collection of integrated landscape data and information that can improve conservation efforts in South Sumatra.

Introduction

When KS started operating in the Sembilang-Dangku Landscape in 2015, the majority of the landscape comprised of agricultural land, monoculture plantations (such as acacia, rubber, oil palm), and paddy fields interspersed with fragmented pockets of protected areas. The remaining forested areas consisted of primary and secondary forest, peatlands, and mangroves.

Historically, the rapid expansion of commercial plantations has reduced the province's biodiversity and degraded essential ecosystems. This makes much of South Sumatra vulnerable to regular floods and wildfires, resulting in the destruction of crops and low yields in production areas. If such degradation is left unchecked, it can greatly weaken the province's environmental and social resilience to climate change and increase its impact on the global climate system.

To prevent further loss of biodiversity as well as increase the effectiveness of land-use planning in South Sumatra, KS promoted the adoption of a spatial planning information system. The system was an adaption of the previously implemented system in Papua called SIMTARU which launched in 2015.[1]
In collaboration with South Sumatra Development Planning Agency and other local stakeholders, KS worked to customise, enhance, and effectively use spatial planning and monitoring tools. This platform, created for South Sumatra, was later named "SITARUNG" (*Sistem Informasi Tata Ruang*/ Spatial Planning Information System). KS supported stakeholders in mapping and assessing existing conditions that were used as baseline landscape data for setting landscape management performance targets and, in future, for measuring change. Also, by getting South Sumatra stakeholders to use the same tools, KS had set up a standardised means of assessment across the province, replacing previously varying scales and measurements.

By collating more precise and standardised data and information, KS believed stakeholders could then devise interventions that would be more effective in responding to local conditions and needs, while also better integrating information on threatened species so that vulnerable and environmentally-important areas would be conserved.

KS worked with stakeholders on these spatial planning and monitoring tools: 1) SITARUNG; 2) CBMIS; and 3) SMART. The following discuss how the tools can assist stakeholders in overcoming some of the more prevalent obstacles to effective spatial planning in South Sumatra.

[1] SIMTARU was designed and implemented in Papua under a partnership between Papua Development Planning Agency and UKCCU-PROTARIH which was later continued by USAID LESTARI. The system operated in 2015.

1) **SITARUNG – an online government-run portal system for users to store, analyse, and distribute geo-spatial data and information for spatial planning.**

- **Obstacle:** Lack of transparency in land-use planning decisions; many stakeholders do not understand the criteria for land-use decision making or have easy access to applications which are in process.

How does SITARUNG help? Data and information stored on the portal can be shared, commonly accessed, and used for spatial planning. This means the public, as well as spatial planners and companies, can access information and monitor spatial planning implementations. SITARUNG also provides direct access to a public hotline for reporting spatial or permit violations that can be investigated by law enforcement agencies such as the Corruption Eradication Commission.

Such transparency allows people to discuss, and even challenge, information about the appropriateness of land-use plans and how to adjust them. It also establishes more clearly threats and risks to areas and provides context for why biologically and ecologically important areas need to be protected. At the same time, governments can benefit from such discussions as they provide opportunities for identifying threats/risks early, and where and with who trade-offs need to be negotiated.

Also, the system's online electronic functionality increases the accessibility of land-use plans as stakeholders can access the plans from anywhere and in real-time.

- **Obstacle:** Land-use plans suffer from inconsistent/overlapping maps.

How does SITARUNG help? The system sets clear standards for attributing and mapping data for the province. These standards oversee such criteria as the resolution of images that can be uploaded to the portal, the scale used for maps, and how areas (such as production, protection etc) are zoned. To ensure continuity of these standards, they are enshrined in the system's Standard Operating Procedure (SOP), which acts as an instruction manual that provides for a consistent approach to land-use planning. The SOP is endorsed by a Governor Decree thereby making it mandatory for all users to follow it. The standards are also aligned and integrated with those set by the national One Map System.

This harmonisation of standards allows provincial and national agencies to use a similar "language" when talking about and assessing geo-spatial data. This makes land-use plans easier to understand and allows for more accurate comparisons and assessments of land conditions.

- **Obstacle:** Lack of technical capacity to run complicated spatial planning tools.

How does SITARUNG help? The system is designed to offer simplified access for stakeholders to obtain the latest accurate data and information for running spatial planning processes. This means users with basic computer skills should be able to navigate and obtain information from the portal.

For higher-level users, whose responsibilities include managing the system, KS ran training programmes to ensure such users have the requisite knowledge and skills. These programmes included basic courses in Geographic Information System (GIS) and Remote Sensing, and data management training that included data identification, collection, processing, and updating on the portal.

Spatial planning tools like SITARUNG are only as good as our reasons for and abilities to use it. Ensuring accessibility, local knowledge, experience, and aspirations are integrated into formal land-use planning are necessary for local needs and conditions to be acknowledged in planning as well as for local land-users to feel ownership.

To accomplish this, KS worked with local communities to develop a systematic way of gathering and publishing information about the areas they inhabit known as the Community Based Management Information System (CBMIS). The communities can use the information to protect their land rights; better inform state policies; and assess more critically changes in their environment and propose solutions.

2) **CBMIS – a process that allows communities to generate information for the analysis, monitoring, and use in community planning, decision-making, and advocacy.**

- **Obstacle:** Lack of quality data about rural or hard-to-reach areas.

How does CBMIS help? Policy makers and government agencies may have trouble gathering quality data from remote lands or areas located far from state monitoring facilities. Ultimately, communities that reside there will be the best source of information.

CBMIS provides such communities with a methodology for recording and reporting vital information. For instance, KS worked with districts to come up with reporting indicators that required the most monitoring such as conservation violations, forest/land fires, and land clearing. The communities used these indicators as a basis for monitoring and reporting performance at the landscape level.

Villages in CBMIS districts were given monitoring devices such as smartphones and laptops and trained to use them for reporting on their chosen indicators. Villages submitted their reports to a KS initiative called Monitoring, Evaluation, and Reporting (MER) System, which feeds into spatial planning portals like SITARUNG.

KS conducted CBMIS outreach with 14 villages in South Sumatra. 3 villages have started submitting reports to government agencies and information systems like SITARUNG.

- **Obstacle:** Participatory mapping/community-gathered information too rudimentary to be integrated into sophisticated spatial mapping tools like SITARUNG.

How does CBMIS help? Participatory mapping is an integral approach of CBMIS, and KS has facilitated participatory community land use planning in 21 villages. This involved the development of a village land-use plan that detailed areas of importance (high conservation value zones, where human activities are carried out, conflict/opportunity zones etc), analysed them to identify possible future spatial scenarios, and set out a roadmap for implementing a chosen spatial scenario.

Advanced technology has allowed the mapping process to progress from simply sketched maps to ones that incorporate the use of Global Positioning System (GPS), GIS, standardised scale, and high resolution images. This means the land-use plans can be easily and accurately integrated into spatial mapping tools like SITARUNG.

The ability to insert land-use plans into a government-managed information system like SITARUNG can make issues in those plans more visible to policy makers. This process will also result in greater and clearer communication between communities and governments, creating opportunities for both sides.

Aside from communities, companies overseeing plantations and concessions can also serve as frontline monitors and reporters of changes in the environment. KS customised a data model for the private sector to help concessions monitor HCV and HCS areas. This was developed to be used with the existing spatial monitoring and reporting tool known as SMART. SMART also continues to be used in the landscape by government agencies, such as Forest Management Units (FMU), to monitor and patrol areas of high biological and ecological importance as well as high conflict ones. The new software, developed with concessions, allow them to select indicators to log events and analyse areas for fires, illegal logging, encroachment, poaching, and human-wildlife conflicts.

Use of SMART is expected to result in increased detections of illegal activity, which will lead to more arrests and a downtrend in forest threats.

3) **SMART – a spatial planning tool geared towards conservation that combines software, training materials, and patrolling standards to help users monitor animals and land areas, identify threats such as fires or poaching, and make patrols more effective.**

- **Obstacle:** Lack of accurate information and analyses that can aid conservation.

How does SMART help? The SMART approach combines a cutting-edge site-based management tool with capacity building and a set of protection standards. This involves training and equipping staff; gathering data on wildlife and threats; using the SMART software to store and analyse these data; and critically using these reports and debriefs to better plan and target protection efforts.

Effective protection at conservation sites depends on high quality ranger-based data collection. KS has trained 57 forest rangers from 2 FMUs and 136 representatives from 34 companies.

Since then, FMU Lalan-Mendis has issued a decree to establish a SMART Patrol team. This decree includes the creation of a dedicated organisational structure for patrol and staff members who are responsible for implementing SMART processes in the field. 7 companies have also committed funding to setting up their own SMART Patrol teams and the requisite infrastructure. Some have also voluntarily submitted assessments on lands with high conservation values, increasing knowledge and data of commercially owned lands, where previously data had been scant or unavailable.

Conclusion

The spatial planning and monitoring tools highlighted in this brief provide a replicable model for how governments, companies, and communities can organise activities within their landscape in an inclusive and environmentally sustainable way. However, these tools function optimally only when more and more people participate and use them. This means that spatial planning and monitoring processes must be standardised across Indonesia through One-Map policy if we want the tools to effectively assist us in improving our conservation efforts. Otherwise, environmentally unsustainable activities will just be relocated to areas where these tools are not used. To ensure the tools' scalability and increase user numbers, governments and companies must invest in rolling out these tools nationwide and ensure people know how to use them. This involves making spatial planning and monitoring part of mainstream policy making and everyday life. The next steps for Spatial Planning tools which have come out of KS is for them to be used to facilitate land tenurial conflict resolution and for them to be integrated into the One-Map policy. These spatial tools also have the potential to be upscaled to other geographical locations in Indonesia and further afield.

What is KELOLA Sendang?

KS is a partnership of government, business, communities, and civil society aligned around common interests in conservation, supply chain sustainability, and sustainable economic development. The advantage of such a partnership, also known as a sustainable landscape management approach, is that it is focused at the political level, where land use decisions get made and enforced. It is also concerned with bringing together as many actors as possible rooted in or operating from a defined geographic area since any effort to meaningfully address sustainable land-use and climate change mitigation must first address the needs of local actors. By advancing careful land use planning of production and protection areas with geographically tailored interventions, the partnership can simultaneously address challenges like the conservation of endangered species, deforestation and rural poverty. The ultimate goal of this multi-stakeholder project is to create a government led blueprint for sustainable landscape management which can be upscaled and continued into the future, paving the way for the Government of South Sumatra to achieve its low emissions target and Green Growth Vision.

KS operates in the Sembilang-Dangku landscape of Musi Banyuasin and Banyuasin Districts in South Sumatra, an area that covers around 1.6 million hectares.

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