POLICY BRIEFING 116

Governance of Africa's Resources Programme

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Illegal Sand Mining in South Africa

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RECOMMENDATIONS

- An evaluation of the cumulative impact of sand mining in a given environment should inform the decision to mine sand. Permits should be granted with due consideration to extraction limits and the natural sediment yield of the river system.
- Illegal mines should be closed immediately, and estuary and riparian sand mining should be halted. Sand supplies must be obtained elsewhere, eg, by seeking more sustainable, non-riparian mining and dredging marine deposits.
- Further clarity is needed on the extent to which sand mining is subject to environmental regulation. The lack of independent oversight should be addressed and the extent of the DEA's appellate authority clarified.
- It is essential to enhance the capacity of national and provincial EMIs to curb illegal mining and carry out compliance assessments. Proper implementation and enforcement of EMPs should be prioritised, including in relation to the inspection of environmental authorisations and waste licences.

EXECUTIVE SUMMARY

Natural sand from estuary and coastal land is one of South Africa's most valuable resources. However, there has recently been a drastic increase in uncontrolled and unauthorised sand mining activities in rivers, valleys and estuaries throughout the country. The frameworks governing small-scale sand mining in South Africa lack the necessary financial and human resource capacities to support better environmental compliance, and the enforcement mechanisms to successfully deter illegal activities are weak.[2] Consequently, there has been a flurry of new entrants to the sector, creating a system fraught with social, environmental, legislative and structural challenges. Although the cumulative impact of these illegal activities is yet to be fully determined, existing policy and management responses do not have the urgency required to prevent the irreversible destruction of riverbeds and associated estuarine zones.

INTRODUCTION

Illegal alluvial sand extraction from beaches and inland dunes or the dredging of sand from riverbeds is performed mainly through open pit methods, and requires only basic equipment – a bulldozer to clear vegetation and build access roads; an excavator or front-end loader to remove sand deposits; and trucks for transportation. The extracted sand is then transported a short distance and sold privately to local sand companies and individuals. The barriers to entry are low while the operations are highly lucrative.

Most of the illegal operators in KwaZulu-Natal and the Eastern Cape extract sand directly from main river channels and adjacent sandbanks. Although these operations appear small and localised, they remove important stabilising riparian vegetation and constantly move location, leaving behind unproductive and unrestored land.

Sand budget studies conducted in South Africa by non-governmental organisations (NGOs) and environmental organisations[3] show that

the current sand mining rates in rivers in the eThekwini jurisdiction, for example, exceed the natural regenerative capacity of the resource. These evaluations of sand mining's cumulative impact on the receiving environment should inform permitting decisions, with more careful consideration given to ensure that extraction limits do not exceed the natural sediment yield of the relevant river system. The lack of replenishment to the dynamic river system is eroding sand mining's benefits to communities. If the economic, social and ecological importance of estuarine sand is factored into policy decision-making processes, the opportunity costs of extraction are likely to outweigh the benefits.

Aerial surveys and spatial mapping need to take place along the entire river system to check the actual number of sand-mining operations against the registered, legal operators. There is a need for a more comprehensive national inventory of legal operations to ensure that ecological limits and sand budgets are respected and enforcement closely monitored. These results must inform planning and resource allocation, while trade-offs with other sand users should be considered. No mining should be allowed in critically important and vulnerable habitats, especially estuaries and coastal dunes, and sand should be obtained from elsewhere as well to maintain an adequate and steady supply for construction.

THE ECONOMICS OF SAND

Small-scale mining feeding into industrial supplies such as slate, sand, clay, sandstone, dolerite and granite have increased rapidly in recent years. This is linked closely to the production of construction materials such as tiles, cement bricks and other sand aggregates. Sand is an important input in the South African construction industry and typically used in manufacturing as an abrasive.[4]

At the current market price for sand and the rate of permit allocation, sand miners in South Africa have little incentive to restrict extraction. It is only when the scarcity of the resource becomes apparent that market prices will increase, making alternative sources of sand supply, such as dredging or non-riverine land sources, competitive. Private sector associations and legal sand miners are calling for better regulation in order to deter illegal sand mining, which affects the availability of sand, costs and the competitiveness of legal mining companies (which incur additional environmental compliance costs).

ECOLOGICAL IMPACT OF SAND REMOVAL IN THE ETHEKWINI JURISDICTION

In 2008 the eThekwini Municipality commissioned the Council for Scientific and Industrial Research to conduct a cost–benefit assessment of sand mining in all 18 rivers in its municipal jurisdiction, from the Tongati to the Mahlongwa rivers.[5] This 'Sand Budget Analysis' revealed that the rates of sand extraction exceeded the natural sediment yield of the river systems, resulting in a net loss of sand from the broader system. The report attributed this critical sand supply deficit directly to upstream legal and illegal sand mining, estimated to have removed one-third of all sediment in the system.[6]

When sand and gravel are extracted in quantities higher than is sustainable, changes take place in the river's ecosystem, such as in its channel form, physical habitats and food webs. The removal of sand from the riverbed increases the speed of flowing water, which in turn erodes the riverbanks. Sand also acts as a sponge, which helps in recharging the water table. Thus the progressive depletion of a river is accompanied by sinking water tables, which has an adverse impact on nearby communities.

Sand eroded from upper catchments and transported by rivers is deposited along riverbanks and floodplains where it sustains a riparian habitat and provides fertile ground for agriculture. Sand that is transported into the ocean is eventually deposited along the shore, forming beaches along the coastline. The denudation of Durban's beaches and the erosion of its dunes will cause damage to coastal properties and infrastructure and have a significantly impact on the tourism industry. Sand dunes also form a coastal buffer against storms, a pertinent function given global predictions

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Illegal estuarine sand mining in KwaZulu-Natal, South Africa, in June 2014.

of climate change and the resultant increase in storms and rise in sea level.

Apart from causing depletion, sand mining also damages nearby riparian habitats through destroying vegetation, riverbanks and wetland systems; altering the flow of a river; and fragmenting ecological corridors. Furthermore, illegal sites are not rehabilitated and usually become quickly overgrown with invasive alien vegetation. Unregulated sand mining also results in high levels of disturbance caused by haphazard road access construction – often across flood plains – and the destruction of aquatic habitats through dredging and the use of mechanical diggers. The deep holes left after excavation (often not visible) are lethal hazards to local people, especially children.

Besides the environmental consequences of unregulated sand mining, there are also economic challenges. The income from marine and estuarine-based industries largely sustains the services delivered by local municipalities. A number of industries rely to differing extents on inputs from the natural environment. Some involve the consumptive use of sand (such as mining for the construction industry), others its non-consumptive use (such as beaches for tourism and habitats for fisheries and crustaceans). The latter derives its value from the presence of the resource, rather than from its extraction. Careful cost–benefit analysis is needed in local government planning and allocation decisions in order to optimise a scarce resource that has competing economic uses.

THE GOVERNANCE OF SAND MINING

The environment is an area of concurrent national and provincial legislative competence, meaning that both levels of government may regulate the environmental aspects of sand mining. The main national environmental regulatory authorities are the Department of Environmental Affairs

(DEA) and the Department of Water Affairs (DWA), while each province has a department responsible for environmental matters. Both levels of authority use the National Environmental Management Act of 1998 (NEMA) to regulate certain environmental aspects of sand mining.

The Department of Mineral Resources (DMR) has national jurisdiction over the regulation of sand mining. The key national statute, the Mineral and Petroleum Resources Development Act of 2002 (MPRDA), places all mineral resources in South Africa, including natural sand, under the custodianship of the state. Any person wishing to extract sand must apply to the state for the right to do so and the act sets out a regulatory regime governing the exploitation of the resource, applied through the administration of various rights and permits.

Some clarity is still needed regarding which department is ultimately responsible for regulating the environmental aspects of mining. Between 2008 and 2012 substantial amendments were made to mining legislation in South Africa. The 2008 amendments to the 2002 MPRDA sought to align its environmental requirements with those of the NEMA in order to create one environmental management system for mining.[7] The 2008 agreement sought to repeal all the mine environmental management provisions in the MPRDA and transfer them to the NEMA.

In 2012 the MPRDA was altered further in pursuit of a single environmental approval process for mining, with the state hoping to streamline regulatory processes and licensing systems for mines' environmental management within the DMR, DEA and DWA. Although not yet enacted, the MPRDA Amendment Bill of 2012 gives the Minister of Mineral Resources the ultimate authority to issue environmental authorisations for mining and water licences. The Minister of Environmental Affairs will act as the appeal authority for these authorisations. This 'One Environmental System' will be implemented from 8 December 2014, when the legislation necessary for the implementation of the integrated system will be in effect.

However, environmental NGOs are questioning the objectivity of a mining authority issuing environmental authorisations. They are concerned that the DMR is both 'the referee and the player' in this process.

Laxity in environmental management processes

Although regulations are unique to a particular site, a sand miner generally needs to obtain a mining permit or mining right from the DMR, required under the MPRDA;[8] an environmental authorisation from the DEA, required under the NEMA; a water use licence from the DWA, required in terms of the National Water Act of 1994; and town planning approval for a special consent application from the governing municipality's development planning department.[9] If the applicant wishes to trade sand he/she generally needs a scheduled trade permit from the municipality and possibly a tree removal permit from the Department of Fisheries and Forestry, required by the National Forests Act of 1998.[10]

The MPRDA makes a clear distinction between a mining permit and a mining right. Mining permits are issued to mines that occupy less than 1.5 ha and operate for a maximum of five years.[11] Most sand mines fall in this category. The environmental requirements for this permit type are less rigorous – the prospective sand miner does not have to conduct an environmental impact assessment (EIA) but must submit an environmental management plan (EMP) that indicates mining impact and associated rehabilitation procedures. Currently, the DMR approves EMPs for sand mining.

A mining right is needed when a sand miner wishes to extend the mining area beyond 1.5 ha or mine for up to 30 years. These bigger, more permanent mines need to conduct an EIA and submit both an EMP and a social and labour plan. However, there is no requirement to appoint an independent environmental assessment practitioner and EIAs are done by the mining entity, following guidelines set out by the DMR. This is evaluated by the department's own environmental officials. A mining right also requires the applicant to notify (in writing) and consult the landowner, the lawful occupier of the

land and any other affected parties. The applicant need not own the land on which the sand is to be extracted. The right afforded to a permit holder to occupy land and start mining has sometimes resulted in conflict due to landowners' objecting to mining activities on their land.

Many sand mining operations do not follow existing legal requirements. Sand miners tend to restrict their mining area to the 1.5 ha limit and, after two years, move to an adjacent area and apply for mining permit for another 1.5 ha. In this way a sand miner can mine a large deposit over a number of years without undergoing the full and more onerous procedure of applying for a mining right. Invariably, this leads to EMPs that provide inadequate information on the state of the environment and the potential impact of the mining. In addition, no information is provided on the expected volume of sand that will be extracted from the environment over the mining period. EMPs are standard and not adapted to individual applications. They also do not contain a clearly defined monitoring and auditing programme. The financial provision within the EMP is usually in the region of ZAR[12] 10,000 ($892) and is not enough to cover the expected costs of rehabilitating a 1.5 ha site, with the result that no restoration activities actually take place.

South Africa's mining legislation requires mining companies to include detailed monitoring plans in the EMPs. Although larger mining companies generally have well-developed plans and implement them, this is usually not the case with smaller operators. This is exacerbated by the DMR's restricted capacity to enforce EMPs and issue penalties for non-compliance. The process of enforcement is further complicated by difficult procedures, complex requirements and a dearth of resources, especially in provinces and municipalities.

Environmental management inspectors (EMIs) or 'Green Scorpions' may only enter and inspect premises, gather evidence and issue written notices on private land if a warrant is issued for entry, search and seizure. Technically this can only be done without a warrant if waiting for due process would defeat the object of the raid. This is difficult to prove in the case of an illegal full-time mining pit. EMIs are also limited in number and overwhelmed by their mandate to cover all of South Africa's environmental crimes. Local authorities are also clearly reluctant to put their own safety at risk due to the criminal nature of some of these activities.

Despite the government's efforts to set up a joint compliance and enforcement project on illegal sand mining, a more co-ordinated enforcement strategy is still needed. The involvement of the DMR is integral to this process. The Regional Mining Development and Environmental Committee platform does provide an opportunity for relevant national, provincial and local environmental authorities to comment on these plans and influence the decisions of the Minister of Mineral Resources.

CONCLUSION

Because of sand's dynamic nature as a resource, its extraction needs to be viewed as part of a broader system. Sand mining is an extractive activity in that the stock of the resource decreases as it is used. The sustained future demand for sand by the construction industry will only perpetuate the existing situation, where the mining rate exceeds the natural rate of replenishment, resulting in a decrease in sand reserves. It is therefore imperative to better understand the sand yield for particular river systems, and limit upstream extractive activities that will have negative downstream impacts. This includes an acknowledgement that illegal activity is rife throughout the system.

Given the disastrous effects of uncontrolled sand mining, it is imperative that this sector be better regulated to conserve the limited resource; permit its ordered and sustainable exploitation; and mitigate the associated environmental impacts. This matter deserves urgent attention and prioritisation from the government, especially when one considers the non-payment of royalties to the state and the lack of mandated restoration activities. These challenges need to be viewed in conjunction with the resultant ecological and social damage. Better enforcement is needed to discourage illegal activities and eventually

prohibit the extraction of all river and estuarine sand, while seeking other sources of sand for the construction industry.

ENDNOTES

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2 Sand mining for the extraction of minerals (titanium and zirconium) takes place on a larger scale in South Africa. These minerals typically occur combined with ordinary sand. Governance in this space does not face the same challenges as the unregulated, informal mining sector.

3 CSIR (Council for Scientific and Industrial Research), *Sand Supply from Rivers within the eThekwini Jurisdiction, Implications for Coastal Sand Budgets and Resource Economics*, CSIR, Report, CSIR/NRE/ECO/ER/2008/0096/C, September 2008; Coast Watch, WESSA, Ezemvelo KZN Wildlife, *Investigational Report: An Inventory of Sand Mining Operations in KwaZulu Natal Estuaries, Thukela to Mtamvuna*, September 2007.

4 The composition of sand is highly variable, depending on local rock sources and conditions, and this influences its use.

5 CSIR, *op. cit*.

6 Dams are responsible for another third, reducing the flow of sediment to the beaches to only one-third.

7 For examples of cases that demonstrate the regulatory conflict between minerals and environment affairs, see *Swartland Municipality v. Louw* (650/ 2010) (September 2011) and *the City of Cape Town v. Maccsand* (CCT103/11, 12 April 2012.

8 Sand miners would not ordinarily seek prospecting or reconnaissance permission to mine because deposits of natural sand are easily identifiable and no prospecting is required.

9 Water use licences and forestry permits are issued by the national departments. Environmental authorisation in terms of the NEMA is also centrally managed unless the mine is of national importance or large enough to straddle two provinces, in which case the national DEA would be the competent authority and the provincial environmental authority would issue environmental authorisation. Planning and trade permits are issued at a local government level.

10 It is important to note that the authorisation from a landowner, councillor or tribal authority does not constitute legitimate approval to undertake mining activities.

11 The 2008 MPRDA Amendment Act proposes to increase the mining area for which a mining permit may be granted from 1.5 ha to 5 ha.

12 Three-letter currency code for the South African rand.

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