



Streamlining social impact assessment and disaster risk assessment for the 21st century – Perspectives from South Africa

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**Leandri Kruger, Luke Sandham^{id} and
Dewald van Niekerk**

North-West University – Potchefstroom Campus, South Africa

Abstract

Despite considerable improvements in social impact assessment practice, the shortfalls and neglected status of social impact assessment persist. Integrated impact assessments have been suggested to address some of these shortcomings. Due to its transdisciplinary nature, disaster risk assessment has been identified as an emerging area that could assist social impact assessment in managing social changes and risks and improving community resilience. Emerging research from South Africa and abroad have shown that social impact assessment–disaster risk assessment integration offers opportunities for streamlining and improved practice across four areas, that is, theoretical discourses, legislative and statutory provisions, practitioner perspectives and combined methodologies. The resulting streamlined social impact assessment and disaster risk assessment will be more suitable for 21st-century challenges, allowing for enriched social impact assessment practice, contributions to social sustainability and strengthening of the social resilience of at-risk communities. From observations of the South African context, we suggest that streamlined social impact assessment and disaster risk assessment will optimally address the challenges of developing sustainably and enhancing the resilience of at-risk societies in the 21st century in South Africa, the global south and also the rest of the world.

Corresponding author:

Luke Sandham, North-West University – Potchefstroom Campus, Hoffman Street, Potchefstroom 2531, South Africa.

Email: luke.sandham@nwu.ac.za

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Introduction

The goal of sustainable development was formalised 50 years ago in 1972 at the United Nations Conference on Human Environment in Stockholm (World Commission on Environment and Development (WCED), 1987). Since then, the aspiration to a sustainable and thriving future that balances environmental protection, economic growth and the social well-being of society has been a driving force for world leaders and policy-makers (Aucamp, 2015; Barrow, 2006; United Nations (UN), 2012). The implementation of the sustainable development goals (SDGs) is still ongoing, where the emphasis continues to be placed on developments that are sustainable and that safeguard at-risk communities (SDG 11) (United Nations Development Programme (UNDP), 2016). Moreover, the increased frequency and intensity of experienced disasters in recent years, such as the COVID-19 pandemic of 2020–2022, earthquakes, collapse of mine tailings dams, floods and the war in Ukraine, have placed an increased focus on enhancing community resilience globally.

The third priority of action of the Sendai Framework for Disaster Risk Reduction (SFDRR) of 2015–2030 also specifically highlights the need for impact and risk assessments, like social impact assessment (SIA) and disaster risk assessment (DRA),¹ to be streamlined for the strengthening of community resilience (United Nations International Strategy for Disaster Reduction (UNISDR), 2015). In addition, 4 years after the publication of the SFDRR, the Global Assessment Report of Disaster Risk Reduction (GAR19) re-emphasised the streamlining of risk assessments in complex-systems thinking by encouraging integration, transdisciplinary and multi-sectoral research, and further stated that ‘... risk assessment and decision-making efficiency can be improved, duplication of efforts reduced, and connected collective action facilitated’ (UNDRR, 2019: v). Further impetus has been lent by the increasing use of environmental and social safeguards or frameworks including those of the Development Bank of South Africa, other regional banks, the World Bank and the World Wide Fund For Nature (WWF). These safeguards

... provide guidance on how to systematically manage unintended social and environmental project impacts, such as restrictions on local people’s access to or use of natural resources. To avoid, mitigate or compensate for these unintended or undesired impacts on the local population and environment, safeguards define processes and minimum requirements in project work on various topics, such as stakeholder engagement or the protection of indigenous groups. (WWF, 2019)

However, the question persists whether these global agreements and management frameworks and tools will ensure positive change for future generations (Fischer, 2022), or whether they will remain aspirations only.

Therefore, the aim of this article is twofold: first to explore the streamlining² of SIA³ and DRA⁴ as one potential route to sustainable development and enhanced community

resilience, and second to investigate the potential improvement of SIA practice by streamlining. In doing so, in this article, we explore the validity of SIA and DRA theoretical and conceptual frameworks; then, the emerging areas in SIA are discussed, with specific focus on recent studies conducted in South Africa; and finally, streamlined SIA-DRA is explored as a potential avenue to optimise SIA in the 21st century.

Streamlining SIA and DRA

The development of SIA internationally dates back to the 1970s along with the origin of Environmental Impact Assessment (EIA). A similar path has been followed in South Africa, where SIA is conducted as a specialist study in the broader EIA process (Du Pisani and Sandham, 2006). The effectiveness of SIA in South Africa has been a specific topic of research interest, with focus on the widely observed neglected state of SIA (Du Pisani and Sandham, 2006; Hildebrandt and Sandham, 2014; Kruger and Sandham, 2018). These studies have highlighted some of the shortcomings which might have exacerbated the weak performance of SIA, including the lack of skilled and experienced social experts, poor quality of SIA reports and the lack of flexible methodological guidance fit for developing countries with a unique and complex⁵ social context, like South Africa and many other developing countries.

In order to ensure that proposed interventions⁶ are sustainable, there should be a clear understanding of these interventions, the disaster risks they pose and the impacts they hold (Usman et al., 2013). SIA can therefore be instrumental in the link to understand disaster risk, to enhance community resilience and socioeconomic outcomes. In return, DRA (in the broader thrust of disaster risk management (DRM)) can strengthen and optimise the functioning of SIA in development planning, leading to more favourable resilience outcomes. In this article, we refer to SIA as a project-specific tool, and also as a generic tool for wider application. Moreover, SIA can function pro-actively as well as retro-actively, for example, to assess social impacts after an intervention, such as a disaster.

Compared to SIA, the historical development of DRM dates back to the early 1950s, when disasters were still acknowledged as unmanageable phenomena. Following global agreements for DRR, South Africa was one of the first countries in Southern Africa to formalise DRM (Van Niekerk, 2014), and its legislative and policy provisions continue to play a vital role in the South African disaster risk context.

However, it is evident through the SIA-DRA history that they have developed as two distinct fields of practice, mandated under different jurisdictions, but demonstrating considerable overlap (Alcántara-Ayala et al., 2022; Kruger et al., 2020). Due to their multi- and transdisciplinary characteristics, it has been suggested to '*tackle them simultaneously*' (Domínguez-Gómez, 2016; Imperiale and Vanclay, 2016; Mahmoudi et al., 2013; Wisner et al., 2012b: 16), that is, an indication of the need for integration. This integration should occur in complex systems which, in turn, need a holistic and integrated understanding (Coetzee et al., 2016). People's vulnerabilities should be at the forefront of development concerns and should therefore be addressed through the collaboration of fields like environmental management (EM), DRM, and sustainable development (Wisner et al., 2012a). Yet, their streamlining has been sparsely investigated.

In view of the historical and current state of SIA and DRA, we suggest that the broader SIA and DRA theoretical and conceptual frameworks are still valid, as long as there is continual improvement of approaches in view of the complexity of social systems. It is against this background that researchers have started to investigate SIA-DRA integration internationally and in South Africa (Cottrell and King, 2011; Domínguez-Gómez, 2016; Imperiale and Vanclay, 2016; Kruger et al., 2020, 2021, 2022; Mahmoudi et al., 2013; Usman et al., 2013). The discussion now turns to this emerging area of streamlined SIA and DRA to address the developmental challenges of complex systems in the 21st century.

Emerging areas for streamlined SIA and DRA

Four areas of potential streamlining have emerged recently: (1) theoretical discourses, (2) legislative commonalities, (3) practical discourses and (4) methodological comparisons. In order to show how SIA and DRA can be adapted innovatively to address global changes and threats to the social landscape, each of these is discussed in turn below. The work of Kruger and others was the first such work in South Africa, and in previously published work has investigated each of these aspects in depth (Kruger et al., 2020, 2021, 2022).

In this article, we present a coherent overarching view of the potential streamlining, drawing from the previously published details.

Theoretical discourses

The theoretical bases of SIA-DRA integration highlighted three areas of potential integration, namely, focus, approach and regulation (Kruger et al., 2022). First, we argue that SIA and DRA have a shared ‘*people-centred*’ focus towards the achievement of sustainable development outcomes. This shared focus is emphasised in the core definitions and understanding of SIA and DRA, where people are placed at the forefront of future sustainable interventions. Similar commonalities regarding their focus are also found in the sustainable livelihoods framework (SLF) to achieve better outcomes towards sustainable development and enhanced community resilience.

Second, SIA and DRA share similar approaches in that they both are pro-active and form part of planning processes to inform decision-making. Furthermore, both SIA and DRA are transdisciplinary in nature and involve an ‘*all systems approach*’ that encourages the collaboration of multiple stakeholders and embracing complexity.

Third, the theoretical discourse for regulation emerged as a potential area for streamlining. In South Africa, both SIA and DRA are mandatory, and there is considerable overlap between SIA provisions in the National Environmental Management Act (NEMA) and DRA provisions in the Disaster Management Act.

A global historical overview of SIA and DRA shows that these fields have developed separately from each other, but in practice their development has resulted in areas of overlap that allow for potential streamlining (Kruger et al., 2022). Hence, the integration of SIA with other fields of impact and risk assessment in order to reduce the risks and vulnerabilities of communities, and subsequently increase their resilience, has, on the

one hand, been supported (Barrow, 2000; Becker, 1997; Cottrell and King, 2011; Domínguez-Gómez, 2016; Freudenburg, 1986; Mahmoudi et al., 2013; Morrison-Saunders et al., 2014; Usman et al., 2013), but, on the other hand, also contested (Morrison-Saunders et al., 2014; Vanclay, 2014).

Despite these arguments, and the isolated evolution of SIA and DRA, the theoretical discourses suggest that their streamlining should be encouraged to address community resilience through an all-systems approach.

Legislative commonalities

A second area of potential SIA-DRA streamlining is suggested in terms of regulation and statutory provisions. A legislative comparison of SIA and DRA in South Africa revealed significant commonalities as well as a need for improved SIA regulatory provisions (Kruger et al., 2020). These findings are broadly categorised under two themes: first, the *exclusion* of explicit social features in SIA legislation as opposed to the more pertinent *inclusion* thereof in DRA, and second, the shared motives of these two fields of assessment.

The legislative comparisons re-emphasise the shared vision of SIA and DRA with respect to risk reduction, community resilience and sustainable development. However, explicit and descriptive details pertaining to 'social impacts' were found to be lacking in the legislative and statutory provisions for South African SIA, but we argue that it could have been implied in definitions elsewhere in the legislative provisions. For example, the definition of the term 'environment'⁷ in the NEMA No. 107 of 1998 is very broad and refers to the social dimension of the environment by including people and their livelihoods (Republic of South Africa (RSA), 1998: 8). The investigation also found that a strong biophysical focus prevails in EIA legislative provisions, with limited explicit inclusion of the social dimension of EM (born out by Parsons, 2020 in Australia), whereas social aspects featured more prominently in DRA regulatory requirements.

Despite SIA and DRA being distinct fields of practice, there are clear commonalities in their shared drive (1) to reduce social risks and impacts, (2) to increase community resilience and ultimately (3) to achieve the required sustainable development outcomes. These findings are corroborated by evidence in literature that has recognised the interrelationships and interdisciplinary nature of SIA and DRA, and supported their streamlining (Aucamp et al., 2018; Barrow, 2010; Esteves and Vanclay, 2009; Tajima et al., 2014).

Practical discourses

The third area of streamlining is the practice of SIA, which has been investigated through many lenses, with its neglected position in the broader EIA process as a prevailing area of research interest (Burdge, 2002, 2003; Chadwick, 2002; Glasson and Heaney, 1993; Hildebrandt and Sandham, 2014; Kruger and Sandham, 2018). As an emerging trend internationally and in South Africa, and as a component of their potential integration, four practical discourses regarding SIA and DRA are explored – that is, (1) expertise of specialists, (2) practical hindrances, (3) methodological guidance and (4) integration. To do so a mixed-methods approach was followed to explore the perspectives from a sample

of SIA and DRA experts, utilising a structured questionnaire designed around these four practical discourses (Kruger et al., 2021).

The first practical discourse regarding the expertise of social and disaster risk specialists revealed that experts in these fields come from diverse backgrounds and varying years of experience, which most likely contributed to them operating in silos. However, their diversity has demonstrated the potential for streamlining the future practice of both fields. The second practical discourse deals with perceived obstacles in SIA and DRA practice, where an array of hindrances to optimise practice was observed, similar to those reported elsewhere (Arce-Gomez et al., 2015; Aucamp and Lombard, 2017; Imperiale and Vanclay, 2021; Kruger and Sandham, 2018; Van Riet, 2009; Vermaak and Van Niekerk, 2004). Although considerable improvements have been made thus far in both fields, these hindrances typify the prevailing practical impediments in SIA and DRA. A few of these hindrances included limited timeframes and budget constraints, lack of skills and expertise, experts working in silos and the absence of prescriptive requirements.

The third practical discourse emerged as one persistent observed hindrance and is focused on the lack of flexible methodological guidance for SIA, coupled with the need for more rigorous risk assessment guidance in SIA, which was in line with the findings from Hildebrandt and Sandham (2014), and Kruger and Sandham (2018). However, experts have demonstrated that this was not a barrier and encouraged the application of guidance from other risk and impact assessment fields to complement current existing guidance. Presumably this could include the various environmental and social safeguards or frameworks.

The fourth practical discourse concluded that despite the distinct differences and hindrances, both fields offer opportunities for collaboration and streamlining in the quest to optimise practice. Hence, the integration of impact assessments was broadly supported by both fields of practitioners.

Following from the third and fourth practical discourses, the streamlining of SIA-DRA methodological approaches was a fourth area for further investigation which is discussed in more detail below.

Methodological comparisons

An emerging theme from the practical discourses was the absence of flexible SIA guidance that both provides guidance of less experienced practitioners, while not constricting those with more experience. Noticeably absent was the guidance for conducting social baseline surveys.

An investigation of such methodological optimisation for South Africa revealed considerable scope for cross-fertilisation and consequent streamlining. The investigation was done by comparing and evaluating similarities as well as differences between South African SIA and DRA methodological guidance, and then comparing to international best practice guidelines (Kruger et al., 2023). The investigation comprised a document analysis of purposely selected SIA and DRA guidance documents (Barbour, 2007; National Disaster Management Centre (NDMC), 2016; Vanclay et al., 2015).

It was found that although the SIA guidance (Barbour, 2007; Vanclay et al., 2015) was helpful and in line with international best practice guidance, it fell short in terms of adequate guidance for social baseline studies, and is likely to fail in complex, dynamic disaster-prone social contexts as encountered in some developing countries. Moving to DRA guidance, the South African DRA guideline document (NDMC, 2016) is comprehensive and rigorous, but with enough flexibility for adaptation to specific contexts. This suggests using an integrated social risk baseline study, following the broad DRA approach, but allowing adjustments for particular social contexts. For example, social assessment variables suggested in the SIA guidance are treated as potential social hazards for which disaster risk is assessed. Furthermore, the methodological integration between aspects of SIA and DRA is supported to improve and streamline SIA guidance and best practice, enhance social resilience and contribute to the broader sustainable development drive.

It is against some of these emerging areas in South African SIA research, together with other recent developments in the field of impact assessments, that the last section provides our view of and recommendations for a streamlined SIA-DRA and following from that an optimised SIA in the 21st century.

Towards a streamlined 21st-century SIA-DRA

Earlier in this article we posed the question of whether the global advances towards a sustainable and resilient future will remain as mere aspirations, or whether they will become the driving force behind change in the 21st-century impact assessment agenda. Internationally, advances in the guidance for assessing social impacts have been made (Parsons, 2020), and the use of Environmental and Social Safeguards is becoming more prevalent. Moreover, guidelines for conducting resilience impact assessments have been developed and strengthened in recent years (Robertson et al., 2021; Vanclay et al., 2015).

However, Arnold et al. (2022) demonstrated that complex social systems often need to be better accounted for in a biophysically dominated impact assessment arena. They further argued that social impacts are '*accompanied by a unique set of challenges*'; therefore, evaluation and development in guidance, methods and tools are continuously required (Arnold et al., 2022: 8; Parsons, 2020). This dovetails with the arguments of Coetzee et al. (2016) on DRA and complex adaptive systems.

In line with the global agenda for a more sustainable and resilient future, emerging trends in SIA have been investigated, including the integration of DRA to optimise SIA. Globally, governments aspire to simplify or expedite various forms of impact assessments, where the focus seems to be more on the streamlining of specific aspects of impact assessments, but whether these reforms address any real-world problems is being questioned (Fischer, 2022; Fischer et al., 2023). Despite the potential obstacles to strengthening impact assessment, Morrison-Saunders et al. (2014: 2) also support complementary, interdisciplinary integration. They argue that the '*proliferation of impact assessments*' has resulted in silo-based thinking on a regulatory, theoretical and practical level, which create confusion for practitioners, project proponents and regulators alike, and thus undermine the fundamental principles and effectiveness of impact assessment for sustainable and resilient decision-making.

In order to link from the theoretical to practical, we suggest that the use of the Global Industry Standard on Tailings Management (GISTM) be strongly considered in the streamlining process. While the GISTM is targeted at mining and specifically tailings, it has sufficient generic relevance to be useful in a wider SIA-DRA context. The Standard consists of 15 principles, grouped into six key topics, of which the following are of relevance here, since they deal with the fields of SIA and DRA (Global Tailings Review, 2020):

PRINCIPLE 1: Respect the rights of project-affected people and meaningfully engage them at all phases of the tailings facility lifecycle, including closure.

PRINCIPLE 3: Use all elements of the knowledge base – social, environmental, local economic and technical – to inform decisions throughout the tailings facility lifecycle, including closure.

PRINCIPLE 13: Prepare for emergency response to tailings facility failures.

PRINCIPLE 14: Prepare for long-term recovery in the event of catastrophic failure.

Meaningful engagement with these principles in SIA and DRA should be a useful point of commencement for streamlining.

In conclusion, we argue that simplification and streamlining are vital to optimally address social issues in complex systems, and that silo-based SIA and DRA expertise should be merged. The integration of DRA with SIA is proposed as an avenue to optimise SIA in the 21st century, in terms of theoretical and practical discourses, legislative provisions and methodological guidance. However, there is an ongoing need for more vital awareness of unique social contexts and interdisciplinary training, coupled with guidance and frameworks for decision-makers, regulators and practitioners that provide a better reflection of the realities of the impact assessment process to guide future streamlined SIA-DRA (Arnold et al., 2022: 8). We suggest that a more simplified and streamlined approach to SIA and DRA can assist in addressing 21st-century developmental challenges to develop sustainably and enhance the resilience of at-risk societies, and to enhance SIA practice.

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ORCID iD

Luke Sandham  <https://orcid.org/0000-0002-7670-8377>

Notes

1. Readers unfamiliar with the concepts of DRA, SIA and EIA are referred to standard texts, that is, UNISDR (2017), Esteves et al. (2012), Morgan (2012) and Senécal et al. (1999).

2. The term 'streamlining' refers to the integration or 'cross-fertilisation' of SIA and DRA as two distinct fields of theory and practice with potential overlaps, to function more cohesively without duplication to strengthen the shortfalls of each other. However, in Impact Assessment literature, it is often used interchangeably with simplification or optimisation (Fischer et al., 2023).
3. International Association for Impact Assessment (IAIA, 2003) defines SIA as the '*processes of analysing, monitoring and managing the intended and unintended social consequences*' for any proposed intervention that holds any social changes for communities (p. 5).
4. DRA refers to the '*process to determine the nature and extent of such risk, by analysing hazards and evaluating existing conditions of vulnerability*' (UNDP, 2010).
5. The reasons for complexity include poverty and inequality, growing populations, weak and corrupt governance, and are common to many African countries (Sandham et al., 2022). Hence, in such situations, the desire for development in order to escape from poverty often takes precedence over environmental concerns.
6. Proposed interventions refer to development projects (i.e. infrastructure developments, resource extraction projects, housing developments etc.), policies, plans and programmes (Esteves et al., 2012). In the context of this article, disasters become interventions that are not proposed.
7. The NEMA refers to the environment as
 - (i) the land, water and atmosphere of the earth; (ii) micro-organisms, plant and animal life; (iii) any part or combination of (i) and (ii) and the interrelationships among and between them; and (iv) the physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and well-being. (RSA, 1998: 8)

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Author biographies

Leandri Kruger (PhD) is a senior lecturer at the North-West University with more than 10 years' research experience. She has a transdisciplinary research focus in Social Impact Assessment and Disaster Risk Science. the North-West University.

Luke Sandham (PhD) is an extraordinary professor of Geography at the North-West University. His research focus is on Environmental Impact Assessment effectiveness, including the interface of Social Impact Assessment and Disaster Risk Assessment.

Dewald van Niekerk (PhD) is a professor in Geography and head of the African Centre for Disaster Studies at the North-West University. His research interests include disaster risk governance, early warning and multi-sector Disaster Risk Reduction.

Résumé

L'approche dominante de la vulnérabilité sociale aux risques d'inondation est confrontée à certains défis concernant sa capacité à traiter la complexité des processus de causalité. L'objectif de notre étude est d'analyser d'un point de vue relationnel les processus qui

produisent la vulnérabilité sociale dans les impacts des inondations. A cette fin, nous proposons une analyse des réseaux sociaux qui identifie et articule systématiquement les relations entre les conditions et les causes de la vulnérabilité sociale. Cette analyse est testée dans le cas spécifique du risque d'inondation sur la côte de la province d'Alicante (sud-est de l'Espagne). Afin de comprendre les conditions et les causes de la vulnérabilité sociale au risque d'inondation, un groupe multidisciplinaire d'experts locaux a été consulté et les données obtenues ont été traitées de manière relationnelle à l'aide des logiciels Atlas.ti et Gephi. Le résultat est un réseau de vulnérabilité sociale composé de 84 nœuds et 189 arêtes et distribué en 4 dimensions: capacité d'adaptation des touristes, structure socio-économique, planification de l'utilisation des terres et gestion des risques. Les informations ont été classées en fonction de la centralité de la relation entre les nœuds, révélant les composantes ayant le plus grand pouvoir causal de vulnérabilité aux impacts sociaux en cas d'inondations: faible sensibilisation au risque d'inondation, croissance économique basée sur le boom immobilier, spéculation immobilière et manque d'intérêt politique pour la gestion du risque d'inondation. Cette proposition met l'accent sur les forces motrices de la vulnérabilité sociale et non exclusivement sur les conditions d'adaptation spécifiques de la population, ce qui permet une identification et une gestion stratégiques des forces motrices qui induisent en fin de compte les impacts sociaux des inondations.

Mots-clés

Catastrophe naturelle, impact social, risque naturel, analyse de réseau, évaluation des risques

Resumen

El enfoque dominante de la vulnerabilidad social ante el riesgo de inundaciones se enfrenta a algunos retos relativos a su capacidad para abordar la complejidad de los procesos causales. El objetivo de nuestro estudio es analizar desde una perspectiva relacional los procesos que producen vulnerabilidad social en los efectos de las inundaciones. Para ello se plantea un análisis de redes sociales que identifica y articula sistemáticamente las relaciones entre las condiciones y las causas de la vulnerabilidad social. Este análisis se pone a prueba en el caso concreto del riesgo de inundaciones en la costa de la provincia de Alicante (Sudeste de España). Para conocer las condiciones y causas de la vulnerabilidad social ante el riesgo de inundaciones, se consultó a un grupo multidisciplinar de expertos locales y los datos resultantes fueron procesados de forma relacional empleando los softwares Atlas.ti y Gephi. El resultado fue una red de vulnerabilidad social compuesta por 84 nodos y 189 aristas y distribuida en 4 dimensiones: la capacidad de adaptación de los turistas, la estructura socioeconómica, la planificación del uso del suelo y la gestión del riesgo. La información se clasificó según la centralidad de la relación entre nodos, revelando los componentes con mayor potencia causal de la vulnerabilidad a los impactos sociales en caso de inundaciones: escasa concienciación sobre el riesgo de inundaciones, crecimiento económico basado en el *boom* inmobiliario, especulación inmobiliaria y falta de interés político en la gestión del riesgo de inundaciones. Esta propuesta pone el énfasis en las fuerzas motrices de

la vulnerabilidad social y no exclusivamente en las condiciones adaptativas específicas de la población, lo que permite una identificación y gestión estratégica de las fuerzas generadoras que en última instancia inducen los impactos sociales de las inundaciones.

Palabras clave

Desastre natural, efecto social, riesgo natural, análisis de redes, evaluación del riesgo