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SOUTH ASIA AND SOCIETAL CHALLENGES: A REGIONAL PERSPECTIVE

By

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Abstract

This paper is a summary of the South Asian region's status and interests concerning the seven thematic societal challenges identified under the EU's Horizon 2020 research programme: Health, demographic change and wellbeing; Food security, sustainable agricultures, marine and maritime research and the bio-based economy; Clean and efficient energy; Smart, green and integrated transport; Climate action, resource efficiency and raw materials; A changing world - inclusive, innovative and reflective societies; and, Secure societies - protecting freedom and security of the country and its citizens.

This paper considers the position of seven countries in South Asia: Afghanistan; Bangladesh; Bhutan; Maldives; Nepal; Pakistan; and, Sri Lanka[1]. It also identifies national and regional priorities for the seven themes under consideration.

This paper is an output of the CASCADE project (Collaborative Action towards Societal Challenges through Awareness, Development, and Education) that aims to provide the foundation for a future International Cooperation Network programme targeting South Asian Countries, which will promote bi-regional coordination of Science & Technology cooperation.

The EU recognise a need to strengthen internationalisation through strategic policy action. The need for linkages with Asian countries has been highlighted given the region's rapidly growing research and innovation capacities and the urgency to address global challenges.

The project coincides with the launch of Horizon 2020, a Europe 2020 flagship initiative aimed at securing Europe's global competitiveness. Running from 2014 to 2020 with a budget of just over €80 billion, the EU's new programme for research and innovation is part of the drive to tackle global societal challenges, and create new growth and jobs. International cooperation in research and innovation is an essential element for meeting the objectives of Europe 2020. Recognising the global nature of producing and using knowledge, Horizon 2020 builds on the success of international cooperation in previous framework programmes and is fully open to participation from third countries.

1.   Introduction

This paper is a summary of the South Asian region's status and interests concerning the seven thematic societal challenges identified under the EU's Horizon 2020 research programme: Health, demographic change and wellbeing; Food security, sustainable agricultures, marine and maritime research and the bio-based economy; Clean and efficient energy; Smart, green and integrated transport; Climate action, resource efficiency and raw materials; A changing world - inclusive, innovative and reflective societies; and, Secure societies - protecting freedom and security of the country and its citizens.

The paper considers the position of seven countries in South Asia: Afghanistan; Bangladesh; Bhutan; Maldives; Nepal; Pakistan; and, Sri Lanka. It also identifies national and regional priorities for the seven themes under consideration.

Table 1: Country profiles (adapted from World Bank, 2014)

South Asian Country	Income level	Population (2013, million)	Population growth (annual %)	Land area (sq. km)	GDP per capita (2013, current US$)	Life expectancy at birth (2012, years)	Literacy rate, adult total (% of people ages 15 and above)
Afghanistan	Low	30.55	2.4	652,860	664.8	61	32
Bangladesh	Low	156.60	1.2	130,170	957.8	70	59
Bhutan	Lower middle	0.75	1.6	38,117	2,362.6	68	-
Maldives	Upper middle	0.35	1.9	300	6,665.8	78	-
Nepal	Low	27.80	1.2	143,350	694.1	68	57
Pakistan	Lower middle	182.14	1.7	770,880	1,275.3	66	55
Sri Lanka	Lower middle	20.48	0.8	62,710	3,279.9	74	91

There is great diversity among the seven South Asian countries considered within this paper, as summarised in Table 1.

There are several countries covering a large land area (Afghanistan, Pakistan), while there are also very small countries by land area (Bhutan), including a small island state (Maldives). Several are land locked (Afghanistan, Bhutan and Nepal), while others are islands (Maldives, Sri Lanka) or have substantial coastal regions (Bangladesh, Pakistan).

Similarly, populations range from the very small (Maldives, Bhutan) to some of the largest in the world[3] (Bangladesh is 8th, Pakistan is 6th). All seven countries are experiencing population growth, but the rate of growth varies greatly, from 0.8% per annum (Maldives), to 2.4% (Afghanistan).

The region has three low income countries (Afghanistan, Bangladesh and Nepal) but also an upper middle income country (Maldives). The others (Bhutan, Pakistan and Sri Lanka) are all lower middle. Health and education also vary greatly. Conflict affected Afghanistan has very poor indicators in health and education, while Sri Lanka for example, has a comparatively high adult literacy rate.

Despite these diverse profiles, the region faces many common concerns that link to the Horizon 2020 societal challenges.

2. Context of this paper

2.1. CASCADE project

This paper is an output of the CASCADE project (Collaborative Action towards Societal Challenges through Awareness, Development, and Education) that aims to provide the foundation for a future International Cooperation Network programme targeting South Asian Countries, which will promote bi-regional coordination of Science & Technology cooperation.

The EU, whilst representing only 7% of the world's population, is responsible for 24% of world expenditure on research, 32% of high impact publications and 32% of patent applications, making it a world leader in research and innovation (European Commission, 2012). However, over the past few decades, new key players have emerged within the international landscape shifting the previously dominant position held by the EU towards emerging economies.

The EU recognise a need to strengthen internationalisation through strategic policy action. The need for linkages with Asian countries has been highlighted given the region's rapidly growing research and innovation capacities and the urgency to address global challenges (Annerberg et al, 2010). South Asia in particular is home to more than 40% of the world's absolute poor, but will contribute nearly 40% of the growth in the world's working-age population in the coming decades.

CASCADE is an opportunity for raising awareness of the potential for EU-Southern Asia cooperation and stimulating regional and international participation. With the active contribution of South Asian countries, the endeavour will be to pave the way for more advanced, inclusive and innovative societies.

The 18 month CASCADE project is led by Professors Dilanthi Amaratunga & Richard Haigh from the University of Huddersfield, UK but targets and has the participation of all seven South Asian countries specified in the call: Afghanistan, Bangladesh, Bhutan, Maldives, Nepal, Pakistan and Sri Lanka. The project set out to:

1. Compile a regional position paper that identifies global challenges and research priorities
2. Map and develop an inventory of national and regional stakeholders related to global challenges
3. Raise awareness on research & innovation priorities for fostering cooperation and towards building mutual understanding on how to address common global societal challenges

2.2. Horizon 2020

The project coincides with the launch of Horizon 2020, a Europe 2020 flagship initiative aimed at securing Europe's global competitiveness. Running from 2014 to 2020 with a budget of just over €80 billion, the EU's new programme for research and innovation is part of the drive to tackle global societal challenges, and create new growth and jobs. International cooperation in research and innovation is an essential element for meeting the objectives of Europe 2020. Recognising the global nature of producing and using knowledge, Horizon 2020 builds on the success of international cooperation in previous framework programmes and is fully open to participation from third countries.

2.3. Methodology

This regional paper draws upon the findings of seven national positions developed for Afghanistan (Sherzaman, 2014), Bangladesh (Asian Disaster Preparedness Center and Patuakhali Science and Technology University, 2014), Bhutan (Tshering, 2014), Maldives (Khalid, 2014), Nepal (Sitoula, 2014), Pakistan (Hussain et al, 2014) and Sri Lanka (Goonesekera et al, 2014). In doing so, it provides a regional perspective on global societal challenges of mutual interest to the EU and South Asian region.

Table 2: Lead contributors to national and regional papers

National / regional paper	Lead contributors
Afghanistan	Nangarhar University
Bangladesh	Patuakhali Science and Technology University
	Asian Disaster Preparedness Center
Bhutan	Royal Institute of Management
Maldives	ECO CARE
Nepal	Institute of Engineering
	Volunteers for Development Nepal
Pakistan	University of Engineering & Technology, Peshawar
	Local Councils Association of the Punjab
Sri Lanka	University of Moratuwa, Sri Lanka
	Federation of Sri Lankan Local Government Authorities
South Asia	University of Huddersfield
	University of Central Lancashire
	Asian Disaster Preparedness Center

Although each national paper was developed and written by a local, in-country team (Table 2), data collection and analysis was coordinated to ensure consistency. This was achieved through a series of briefing and training events, as well as the issuing of standard protocols and templates. A detailed presentation of the data collection and analysis carried out for each country can be found in the respective national position papers. Below is a summary of the overall methodology.

The methodology was carried out in two phases. Phase 1 of consisted of a detailed policy analysis and Phase 2 used a combination of semi-structured interviews and focus groups.

During phase 1, a content analysis approach was carried out to analyse available policies in the seven South Asian countries targeted by the CASCADE project. The focus was specifically on each of the seven societal challenges targeted under Horizon 2020. This phase set out the current statistics and trends, assessed the policy availability in each area, carried out a situational analysis, and finally, identified key informants that have knowledge or are responsible for developing policies in those areas. These key informants provided the basis for identifying interview and focus group respondents in phase 2.

During the 2nd Phase of the project, semi-structured interviews were used to gather information on each of the Horizon 2020 challenges (Challenge 1 - Health, demographic change and wellbeing; Challenge 2 - Food security, sustainable agricultures, marine and maritime research and the bio-based economy; Challenge 3 - Clean and efficient energy; Challenge 4 - Smart, green and integrated transport; Challenge 5 - Climate action, resource efficiency and raw materials; Challenge 6 - A changing world - inclusive, innovative and reflective societies; and, Challenge 7 - Secure societies - protecting freedom and security of the country and its citizens) and to gain an understanding of each challenge and its impact to the society and country. The experts represented academia, industry and public organisations. 348 interviews were conducted across the seven countries, as summarised in Table 3.

Following analysis of the interview data, a series of focus groups was conducted to get an overall perspective and consensus on all seven Horizon 2020 challenges, and to get an understanding of the key challenges and their impact to the society and country. There were 135 participants in sixteen focus groups across the seven countries, as summarised in Table 4. The experts represented academia, industry and public organisations.

The analysis and writing up of the national position papers was led by the local in-country teams from the CASCADE partner organisations (Table 2). Draft papers were presented to the CASCADE steering committee, and subject to a cycle of feedback and re-writing.

Table 3: Interviews conducted

Challenge	Afghanistan	Bangladesh	Bhutan	Maldives	Nepal	Pakistan	Sri Lanka	Total
1	2	13	5	4	3	18	2	47
2	2	18	7	6	2	19	1	55
3	4	7	3	5	2	13	1	35
4	3	6	4	4	2	19	1	39
5	5	27	7	5	2	29	2	77
6	2	13	4	2	4	8	2	35
7	2	7	4	4	2	39	2	60
Total	20	91	34	30	17	145	11	348

Upon completion of the national papers, a team was appointed to draft the regional paper, which would draw upon the findings of all seven national papers. Priorities and opportunities for EU-South Asian cooperation in research and innovation were proposed based on a summary of the national papers, and subsequently discussed and agreed during several project meetings with the CASCADE consortium.

Table 4: Focus groups participants (number of focus groups in brackets)

	Afghanistan	Bangladesh	Bhutan	Maldives	Nepal	Pakistan	Sri Lanka	Total
Total	13 (1)	21 (3)	23 (1)	11 (2)	22 (1)	12 (2)	33 (6)	135

3. Thematic societal challenges: Regional priorities and opportunities for EU-South Asia collaboration in research and innovation

Below sections highlight the policy and interests of seven countries in South Asia with respect to the seven thematic societal challenges identified under the EU's Horizon 2020 research and innovation programme: Health, demographic change and wellbeing; Food security, sustainable agricultures, marine and maritime research and the bio-based economy; Clean and efficient energy; Smart, green and integrated transport; Climate action, resource efficiency and raw materials; A changing world - inclusive, innovative and reflective societies; and, Secure societies - protecting freedom and security of the country and its citizens.

3.1 Health, demographic change and wellbeing

- **Poor health indicators:** Low life expectancy and high rates of malnutrition, infant mortality, and incidence of tuberculosis (TB) and HIV/AIDS, as well as widespread malaria are some of the major health challenges facing the region. Exchange of science and technology in the health sector is considered a key area of mutual collaboration. The transfer of knowledge will help South Asian countries to adopt new technologies, used for diagnosis, which can help in the early mitigation of diseases and by taking early steps through preventive measures. Priority areas for mutual collaboration with the EU in the health sector include devising integrated health policies, developing physical and technological infrastructure for health care services and delivery, designing and practicing state-of-the-art surveillance systems to detect outbreaks of diseases treat early in time (e.g. cango virus, dengue fever, bird flue), and designing cost-effective and efficient vaccines for prevention of diseases (e.g. hepatitis, TB, malaria, polio, rabies, measles).

- **Reducing the burden of NCDs:** Lower-income countries generally have lower capacity for the prevention and control of NCDs. To lessen the impact of NCDs on individuals and society, a comprehensive approach is needed that requires all sectors, including health, finance, foreign affairs, education, agriculture, planning and others, to work together to reduce the risks associated with NCDs, as well as promote the interventions to prevent and control them. There is an urgent need to lessen the risk factors associated with these diseases. Low-cost solutions exist to reduce the common modifiable risk factors (mainly tobacco use, unhealthy diet and physical inactivity, and the harmful use of alcohol) and map the epidemic of NCDs and their risk factors. Other ways to reduce NCDs are high impact, essential NCD interventions that can be delivered through a primary health-care approach to strengthen early detection and timely treatment. The creation of healthy public policies that promote NCD prevention and control, and reorienting health systems to address the needs of people with such diseases, are also priorities.

- **Financing healthcare and affordability:** Most countries in South Asia need to give more people access to affordable, quality health care. Too many people, especially women, cannot get the medical treatment they need due to high costs, difficulties in getting permission to see a doctor or a lack of health care providers in rural areas. There is a need for capacity building for health personnel, disease awareness and prevention.

- **Addressing the care and well being of the ageing population:** South Asia faces significant challenges in dealing with how future economic growth rates respond to the aging of the work force and the ultimate slowing in its growth. The region will need to ensure their social insurance systems are well adapted to confront the issues posed by an ageing population, and that the medical systems and social insurance are able to cope with the requirements of rising longevity, including the associated costs.

3.2 Food security, sustainable agricultures, marine and maritime research and the bio-based economy

- **New and climate resistant crops and varieties (e.g., high yield varieties) and technologies to increase productivity and sustainability:** The health and well-being of the world's growing population are largely dependent on the ability of the agricultural industry to raise high yielding and climate resistant food crops. Inclusive growth provides opportunities for those with meagre assets and skills, and improves the livelihoods and incomes of the poor, especially in agriculture. It is therefore among the most effective tools for fighting hunger and food insecurity, and for attaining sustainable progress. Enhancing the productivity of resources held by smallholder family farmers, fishing and forest communities, and promoting their rural economic integration through well-functioning markets, are also essential elements of inclusive growth. Technology and knowledge transfers can also help in achieving increased productivity and quality standards (particularly in relation to packaging and transportation) of agricultural and fish produce. This would, in turn, aid in the creation of new international markets for local produce.

- **Protecting agricultural lands:** A large proportion of South Asian land area is in agricultural use. How this important natural resource is used is vital to sustainable development. This includes taking the right decisions about protecting it from inappropriate development.

- **Improve farmers' quality of life and livelihood security:** Improving the quality of life of farmers and fishermen will be important to sustain agriculture and redress the rural to urban migration. Improving the productivity of resources held by family farmers and smallholders is, in most cases, an essential element of inclusive growth and has broad implications for the livelihoods of the rural poor and for the rural economy in general. Well-functioning markets for food, inputs and labour can help to integrate

family farmers and smallholders in the rural economy and enable the rural poor to diversify their livelihoods, which is critical for managing risk, and reducing hunger and malnutrition.

- **Use of bio-technology in marine and fisheries to exploit sea based resources:** Marine biotechnology is essential to satisfy the growing demand for healthy products from fisheries and aquaculture in a sustainable way. The growing demand for marine food will need to be increasingly delivered through intensive aquaculture. Marine biotechnology has the potential to contribute significantly to increasing production efficiency and product quality, to the introduction of new species for intensive cultivation and to the development of sustainable practices in South Asia.

3.3 Clean and efficient energy

- **Harness hydro, wind, solar, biomass and other renewables:** Achieving ambitious deep cuts in emissions and accelerating green growth will require the development and diffusion of carbon-efficient technologies. South Asia has great potential for energy efficiency and renewable energy, including hydro, geothermal, wind, solar and tidal energy.

- **Conservation and efficiency improvements through smart national power grid, including transmission and distribution:** Innovative finance mechanisms and policies are needed to reduce the risks perceived by mainstream lending institutions in cleaner technology investments and to enhance their capacity to finance low-carbon technologies and resource options. Extensive research activities on energy consumption and the efficient use of energy is required, including exchange of science knowledge on the use of smart technologies used in the energy sector for improving efficiency and security, and introducing environmentally friendly technologies for producing energy.

- **Regional cooperation in knowledge sharing, energy development and trade:** There is a need to understand the national energy policies and resource endowments of these countries in order to identify common features and complementarities necessary for a viable regional energy security framework. South Asian countries need enhanced regional energy transfer to leverage economies of scale through a more vibrant intra and inter regional energy trade structure. Key issues faced in energy sector cooperation are centered on the need to develop a regional power market, energy supply availability, energy trade infrastructure, and harmonised legal and regulatory frameworks.

3.4 Smart, green and integrated transport

- **Environmentally friendly, green transport:** Given the rapid rise in vehicular traffic, a trend that is likely to continue due to population and economic growth, affordable, green private and public transport will be essential to control emissions.

- **Introduce / improve 'smart' traffic management:** With limited financial capacity to expand transport infrastructure, intelligent use of existing capacity will be vital to support growth.

- **Integrated transport:** An integrated and efficient transport network is an essential element of the enabling environment for a globalised economy. Effective integration of the transport system in South Asia could also contribute greatly in enhancing access to remote areas, thereby extending economic development.

- **Improved safety standards for all transport infrastructure and services:** Establish missing safety regulations, supported by strict enforcement and policing. Create awareness among people about road safety and also help developing countries to attract investment from multilateral institutions to improve their accident-prone highways. Priorities also include awareness programmes to influence the behaviour of road users, and improving care and rehabilitation following accidents.

3.5 Climate action, resource efficiency and raw materials

- **Integration of climate change adaptation within national policies and planning:** This may include appropriate land-use planning, conservation and biodiversity, community empowerment, and investing in innovative, adaptive and absorptive capacity building activities.

- **Early warning, preparedness and mitigation towards increased resilience:** Shift development towards a mindset of resilience and innovation. Much of South Asia is economically poor, socially and politically marginalised and otherwise vulnerable. Resilience building measures must be inclusive. Research activities are needed on the rapid increase of global warming and air pollution in the southern Asian region, encouraging low carbon growth through the use of new technologies, introducing cost-effective and innovative climate change adaptation methodologies, developing disaster management systems through early warning systems, the efficient use of material, waste management and recycling, and encouraging environmentally friendly innovations in the new private sector.

- **Promote the green and blue economy, develop climate resistant crops and promote economically viable ecosystems and services:** Economic diversification is not the key response needed. What is needed is for all sectors of the economy to be prepared to withstand climate change. In agriculture, for example, new technologies such as rice cultivation systems with more efficient water and nutrient use should be promoted. Altering planting times, using resistant varieties, and diversifying crops can help.

- **Management of resources and development of pollution standards and compliance:** Countries need to look at better management of resources and services. Better coastal zone management, efforts to protect riverbanks from erosion and building climate-proofed roads, bridges and other infrastructure is needed. In the water sector, groundwater should be protected.

3.6 A changing world: inclusive, innovative and reflective societies

- **Improve transparency and accountability towards good governance:** Good governance depends on an ability to exercise power, and to make good decisions over time, across a spectrum of economic, social, environmental and other areas. This is linked with the government's capacity for knowledge, mediation, resource allocation, implementation and maintenance of key relationships. Key factors for the development of better governance and transparency in South Asia include: technical and managerial competence: organisational capacity, reliability, predictability and the rule of law; accountability; transparency and open information systems; participation.

- **Greater inclusivity and improved social harmonisation among diverse populations:** This includes participation of women and youth, and consideration of the vulnerable, internationalisation, and employment. Labour market policies are also in need of reform. There is a need to move from protecting "jobs" to protecting "workers". Public works in countries like Bangladesh have been around for decades, but have lacked an explicit youth component. Employment programmes can directly produce jobs, in addition to spreading good labour practices and growing markets. Social protection for first-time job seekers, including unemployment assistance and employment guarantee schemes are also needed to protect the most vulnerable.

- **Cooperation in education system reform:** This may include introducing modern teaching technologies, updating curricula and education system management, and strengthening relationships with foreign universities to exchange lecturers and students. It may also involve conducting studies on how to strengthen commercial connections to regional and global economies, and research activities to gather accurate data on the labour market to provide research- and evidence-based policies, and strengthen the governance system.

3.7 Secure societies: protecting freedom and security of the country and its citizens

- **Disaster risk reduction, including related information systems:** In accordance with the new Sendai Framework (2015-2030), there is a need for South Asia to 'prevent new and reduce existing disaster risk through the implementation of integrated and inclusive economic, structural, legal, social, health, cultural, educational, environmental, technological, political and institutional measures that prevent and reduce hazard exposure and vulnerability to disaster, increase preparedness for response and recovery, and thus strengthen resilience'. Priorities include a shift from disaster loss to disaster risk, and from disaster management to disaster risk management. A focus on a people-centred preventive approach to risk reduction will be vital, as will defining the primary responsibility of States for risk reduction, but also shared responsibility with stakeholders. The scope of such measures must include slow-onset, man-made and biohazards.

- **Border security, crime, and surveillance:** Fighting crime and terrorism will require new technologies and capabilities for fighting and preventing crime (including cyber-crime), illegal trafficking and terrorism (including cyber-terrorism), including understanding and tackling terrorist

ideas and beliefs to also avoid aviation-related threats. The EU's external security policies in civilian tasks, ranging from civil protection to humanitarian relief, border management or peace-keeping and post-crisis stabilisation, including conflict prevention, peace-building and mediation, will also be invaluable in the region. Other priorities include collaboration in the field of smart technologies for civil registration, to strengthen border management with high-tech protection tools and introducing e-governance.

3.8 Cross cutting themes

- **Development and financing of infrastructure:** Adequate physical infrastructure is a key element of economic growth. However, the developing world needs far more financing for infrastructure than can be provided through overseas development aid and domestic public finances alone. The cost of maintaining existing infrastructure and undertaking necessary extensions of its coverage is estimated at 7 per cent of developing country GDP, equivalent to about 600 billion US dollars (USD) per year. Public spending on infrastructure in developing countries is presently around 3 per cent. Given the shortage of public funds in most developing countries, one solution is to invite greater private sector participation and expand the use of public-private partnerships (PPP).

- **Adopt an evidence-based approach to policy:** The national position papers identified that most of the seven countries under consideration had developed policies aimed towards the thematic areas in Horizon 2020. However, the quality of the policymaking, as well as policy implementation and evaluation, was frequently questioned. Evidence based policy can have an even more significant impact in developing countries. Evidence based policy is a discourse or set of methods which informs the policy process, rather than aiming to directly affect the eventual goals of the policy. It advocates a more rational, rigorous and systematic approach. The pursuit of evidence based policy is based on the premise that policy decisions should be better informed by available evidence and should include rational analysis. This is because policy which is based on systematic evidence is seen to produce better outcomes. The approach has also come to incorporate evidence-based practices. Evidence based policy tends to be less well established in developing countries than in developed ones, and therefore the potential for change is greater. Better utilisation of evidence in policy and practice can help save lives, reduce poverty and improve development performance in developing countries.

- **Capacity building and sustainable development:** International cooperation and collaborations will be essential to address and tackle common global societal challenges, and the need for cooperation towards capacity development was frequently identified at the national level within South Asia.

  The concept of capacity building or capacity development appeared in the late 1980s and became deeply entrenched within the development agenda in the 1990s. Rather than representing a new idea, it reflected growing criticism of many development assistance programmes. In contrast to this extraneous approach, it emphasised the need to build development on indigenous resources, ownership and leadership and by bringing human resources development to the fore. The concept of capacity development was therefore a move away from 'aid' or 'assistance' towards a 'help yourself' approach that was designed to prevent a dependency on aid emerging. Capacity development is based on learning and acquisition of skills and resources among individuals and organisations. While this process may rely on some imported resources, external capacity is seen as a knowledge-sharing device, which allows the strengthening and developing of the local capacity. As such, it relates closely to some definitions of resilience, which stress the objective is to build resilience by maximising the capacity to adapt to complex situations, and whereby resilience describes an active process of self-righting, learned resourcefulness and growth.

  Capacity development is committed to sustainable development, to a long rather than short term perspective, and attempts to overcome the shortcomings of traditional donor- led projects that have been prevalent in many development projects — typically criticised for being too short term rather than sustainable, and not always addressing the needs of the recipients. Development within a capacity building context allows communities and countries to identify their own needs, and design and implement the best strategy within the local context. As a process, it builds on monitoring and evaluation in order to identify existing capacities, deficiencies and the progress and achievements of development.

4. Final note

5. References

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