

Economic Commission for Europe**Committee on Urban Development, Housing and Land Management****Eighty-first session**

Geneva, 6-8 October 2020

Item 4(a) of the provisional agenda

Review of the implementation of the programmes of work 2018-2019 and 2020: sustainable smart cities**Implementation of the United for Smart Sustainable Cities programme****Smart Sustainable City Profile: Rana, Norway****Note by the Secretariat of the Committee**

The Smart Sustainable City Profile was developed as part of the project “Improving sustainability of 17 Norwegian Cities” by United Nations Economic Commission for Europe (UNECE) in collaboration with the Geneva UN Charter Centre of Excellence on Sustainable Development Goals City Transition in Trondheim. The project supports the transition of 17 cities in Norway towards becoming smarter and more sustainable with a view to achieving Sustainable Development Goal (SDG) 11 and other urban related SDGs of the 2030 Agenda for Sustainable Development.

This Smart Sustainable City Profile presents the outcomes of the evaluation of the city against the Key Performance Indicators (KPIs) for Smart Sustainable Cities (SSC) and suggests actions on how the city could improve progress towards the SDGs. It also offers guidance for the development, review and implementation of urban policies, programmes, and projects, as well as for building partnerships with a view to reinforcing the implementation of the 2030 Agenda for Sustainable Development and SDG11 in Norway.

Accelerating progress towards the SDGs and the implementation of the 2030 Agenda for Sustainable Development are political priorities for Rana. The city is an industrial centre for the region of Helgeland and has a large population and uses its capacity to develop and implement innovative solutions and information and communication technologies (ICTs) to leverage progress towards sustainable development. Rana has plans to become a world-class capital of “green industry” and is engendering a “green shift” by implementing plans to improve its transport, air quality, and environmental impact.

Taking into account the KPI evaluation of the city and other documentary sources, this profile makes a series of recommendations to further accelerate the progress of Trondheim towards achieving the SDGs. These recommendations suggest improvements in areas such as water and sanitation infrastructure, public building sustainability, transport infrastructure, and solid waste management.

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Preface

The Sustainable Smart City Profile for Rana (Rana City Profile) was developed as part of the project “Improving sustainability of 17 Norwegian Cities” by the United Nations Economic Commission for Europe (UNECE) in collaboration with the Geneva UN Charter Centre of Excellence on Sustainable Development Goals City Transition in Trondheim. The project supports the transition of 17 cities in Norway towards becoming smarter and more sustainable with a view to achieving the Sustainable Development Goal (SDG) 11 and other urban related SDGs of the 2030 Agenda for Sustainable Development. The implementation period for this project is from August 2019 to July 2021.

The Rana City Profile outlines the efforts of the city to implement the 2030 Agenda for Sustainable Development and SDG11; its “good practices” – policies, programmes, projects and partnerships that accelerate progress towards SDGs in Norway and presents the outcomes of the evaluation of the city against the Key Performance Indicators (KPIs) for Smart Sustainable Cities (SSC) and suggests actions for improving progress towards SDGs.

The KPIs for SSC is a public and free of charge standard developed by UNECE and the International Telecommunication Union (ITU) in the context of the “United for Smart Sustainable Cities” (U4SSC) initiative. U4SSC is coordinated by UNECE, ITU and the United Nations Human Settlements Programme (UN-Habitat) and is supported by fourteen other United Nations agencies.

This City Profile was developed using documentary data sources, including the “U4SSC Verification Report – Rana, Norway” and a survey¹ completed by the city administration. The survey provided insights into the city actions for sustainable development, including ongoing or planned policies, programmes, projects, and built partnerships. UNECE and the city of Rana engaged in multiple bilateral meetings to discuss the city development priorities and to assess the most appropriate areas for action. These areas are outlined in the recommendations section of this City Profile.

This Profile consists of five parts: Part I focuses on the geographical situation, the administrative and political framework, population and demographic situation, and socio-economic conditions of the city. Part II outlines the legal and institutional framework for urban development at the local level and city administrative structure. Part III provides information about the outcomes of the evaluation of the city performance against the KPIs for SSC and highlights the relevant actions and initiatives (e.g. policies, projects, programmes) that the city is taking and Part IV outlines the financial framework for urban development. The Profile concludes with recommendations.

¹ The survey was designed by UNECE and disseminated to the city, and requested information on the policies, projects and programmes that the city is currently implementing, as well as the future projects it plans to implement, in relation to the economy, environment, society and culture of the city.

Acknowledgements

The UNECE secretariat would like to express its gratitude to the city of Rana for providing data and information used in this City Profile.

UNECE wishes to acknowledge the following people for their contributions to the completion of this study.

Ms. Paola Deda – Director, Forests, Land and Housing Division, UNECE

Ms. Gulnara Roll – Secretary to the Committee on Urban Development, Housing and Land Management, UNECE

Ms. Cecilia Batac – UNECE

Ms. Agata Krause – Consultant, UNECE (main author)

Mr. Liam Buckley – Consultant, UNECE

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Executive Summary

The implementation of the 2030 Agenda for Sustainable Development is a priority for Rana, the third largest city in northern Norway (with over 26,000 inhabitants) and an industrial centre for the region of Helgeland. The city uses its capacity to develop and implement innovative solutions and information and communication technologies (ICTs) to leverage progress towards sustainable development. The public services programme of the city that lasts from 2020 to 2024 aims to digitalize public services towards better and more responsible public sector institutions. Mo i Rana is the Arctic host for the Mo Industrial Park, a global leader on green industry. In the Mo Industrial Park located in the city, cutting edge research is conducted and technology is applied to improve energy efficiency and energy recovery, reduce the emissions into air and water, and strengthen the circular economy. Rana is also the home of Freyr, the company planning to produce next-generation green battery cells in Mo i Rana. Freyr aims to use renewable low-cost energy for producing battery cells for electrification purposes, contributing to a reduction in carbon emissions.

To become a hub for business, trade, transport and tourism in the region and internationally, Rana invests in sustainable and green transport and infrastructure. The European route 6 and route 12 motorways of the international E-road network are being modernized, which will improve the connection between Rana and other cities in Norway, Sweden and Finland. The construction of a new airport is expected to bring new visitors and businesses to the city.

Rana seeks to minimise its impact on the environment to fulfil its aspirations to become a world-class capital of "green industry". It has wide-reaching plans in place to engender a "green shift", which entails: a reduction in private vehicle use thus facilitating cycling, walking and public transport and reducing fossil fuel based transportation; reducing speed limits to optimise air quality; and ensuring that upgrades and maintenance of city parks and public buildings are done using sustainable and environmentally-friendly materials.

Rana implements a variety of projects to improve social inclusion and to bolster the cultural life of the city. This includes projects that promote safe and affordable housing for vulnerable groups, It has upgraded hiking and skiing trails in order to facilitate outdoor sports. In recent years, focus has been given to assuring high quality education and preventing dropouts in secondary school, primarily through early intervention.

To support smarter and more sustainable development of Rana, between 2019 and 2020, UNECE carried out an evaluation of the performance of the city against the KPIs for SSC. The evaluation points to a good overall performance on the economy dimension. The city has good access to ICT infrastructure (98 per cent of households have internet connection), uninterrupted electricity supply (with only short electricity outages), and very high employment levels (only 1.8 per cent of the population is unemployed).

On the environment dimension, the evaluation showed that electricity in the city is produced from renewable sources (especially hydro power), and there is good access to green space and nature, as 98 per cent of the population has easy access to green areas. The drinking water quality in Rana is excellent (with 99.4 per cent of the supply adhering to WHO² standards). On society and culture, the evaluation indicated that the population has very stable access to healthcare and education. Access to affordable housing is

² World Health Organization

good, with Rana citizens spending an average of only 15 per cent of income on housing, and economic equality is high (Gini coefficient is 0.2).

As the evaluation demonstrated that private vehicles remain the primary form of transport in the city (account for 71 per cent of commutes) and that the water supply infrastructure is not widely monitored by ICTs and the loss of water from water supply network reaches 37 per cent, UNECE draws attention to the need to improve the efficiency and effectiveness of water and wastewater infrastructures, and to further increase a modal split share in the city. Good practices of the city, such as contracts between the national government and municipalities that focus on reducing reliance on private vehicles should be disseminated internationally.³

Furthermore, the city is encouraged to further reduce the quantity of waste produced and to increase the volume of waste recycled, which can be achieved by promoting responsible consumer behaviour such as avoiding single-use plastic. Ongoing investment to improve energy efficiency of infrastructure in the city should be tailored to focus on sustainability and energy efficiency of old housing stock and office buildings. The development of new technologies and designs that allow the sharing, recycling, refurbishing, re-using, replacing, and digitizing the use of energy, and that stimulate energy savings are also encouraged.

³ <https://www.regjeringen.no/no/tema/kommuner-og-regioner/by--og-stedsutvikling/Byvekstavtaler/id2454599/>

Part I General overview

The city of Rana is located in the region of Helgeland in Nordland County, in one of the largest municipalities in Norway with a total area of 4,460 square kilometre (km²). The Council of Rana is responsible for taking decisions in policy areas such as land use, society and infrastructure projects and development. The Council consists of 37 representatives, elected every four years. The city administration has 1,800 full-time employees.

Rana has 26,000 inhabitants and has long been a home to manufacturing industries. The state-owned Norwegian ironworks was established in the city in the 1950s and contributed to rapid population growth. Between 1946 and 1964, the population of Rana tripled from 9,400 in 1946 to 14,600 in 1955 and 22,500 in 1964. The city is surrounded by national parks, glaciers, agricultural fields, and caves, as well as high and low mountains, fjords, rivers and the Helgeland coast. The climate in Rana allows for skiing in the nearby mountains.

State-owned manufacturing industries had a considerable impact on the development of the city. Since the fall of the industries, more than a hundred businesses have been consolidated into the Mo Industrial Park (MIP). The park includes organizations that are global leaders in “green industry” and that work on such issues as energy efficiency and energy recovery, reduction of emissions into air and water, and the circular economy. Over 30 research and development projects funded within the MIP Sustainability Programme have been carried out on the site of the park.

Rana is a hub for trade, service, leisure, finance, transport and tourism. One of the largest ports in Norway and a number of state institutions, including the National Library and the Norwegian National Collection Agency, are located in the city.

Rana faces the challenges of an ageing population. Although it once had the youngest population in Norway, the number of elderly persons between 1980 and 2020 increased significantly while the number of children aged 6-15 years decreased. Developments such as building a large airport, establishing a battery factory⁴, building a deep-water quay and providing an increased number of educational programmes aim to not only reverse this trend, but also to create development opportunities and improve growth and prosperity in the municipality and region.⁵

⁴ The establishment of a battery factory can provide up to 2,500 more jobs in the municipality. The need for recruitment will be a major task for the community in the years to come.

⁵ Municipal Master Plan 2017-2022.– Available at https://www.rana.kommune.no/organisasjon/planer_budsjett_regnskap/kommuneplan/Documents/Municipal%20master%20plan%202017-2027%20Rana%20kommune.pdf

Part II Legal and institutional framework for urban development

The legal and institutional framework for urban development in Norway is defined by the Municipal Act, the Planning and Building Act, Civil Protection Act and the Public Health Act. The Planning and Building Act mandates the municipalities to develop a long-term master plan, and all cities to have a 4-year action plan and an annual budget.

The municipalities of Norway have considerable self-governing powers. They provide education for children up to the age of 15 as well other child services. They oversee the functioning of schools, day-care institutions (pre-schools), and healthcare facilities in the city. Urban planning, including the provision of infrastructure and water and sanitation, is one of the key responsibilities of the municipality.

Every four years, the national government publishes national expectations regarding regional and municipal planning and sets guidelines for local planning for the next 4-year period. The municipal planning system (municipal master plans, including land use strategies, thematic plans, financial plans and budgets, and sector plans) must collectively meet these requirements. For the current planning period (2019-2023), the government has made the 17 SDGs a new overall framework for regional and local planning.⁶

The Municipal Planning Strategy, Municipal Master Plan 2017-2027⁷ and the financial plan and budget⁸ provide the strategic direction for the development of Rana in relation to urban infrastructure, social inclusion strategies, and land use. The administration leader oversees the implementation of the plans and strategies within the boundaries of the available resources and economic frameworks. The Municipal Master Plan 2017-2027 for Rana promotes sustainable development for the benefit of future generations. It outlines the vision of the city as a "green industry" capital, promoting the idea that the "future is renewable", and defines the top four priorities for investment: attractiveness and growth, green shift, quality of life, and future-oriented infrastructure.⁹

⁶ "National expectations regarding regional and municipal planning 2019–2023". Available at <https://www.regjeringen.no/contentassets/cc2c53c65af24b8ea560c0156d885703/nasjonale-forventninger-2019-engelsk.pdf>

⁷ Municipal Master Plan 2017-2027

⁸ Financial plan and budget 2020-2023

⁹ Municipal Master Plan 2017-2027

Part III Evaluation of the city performance against the Key Performance Indicators for Smart Sustainable Cities

To support the commitment to building a smart and sustainable Rana, in 2019/2020 the city was evaluated using the Key Performance Indicators (KPIs) for Smart Sustainable Cities (SSC). The KPIs for SSC is a United Nations standard on smart sustainable cities developed by UNECE and ITU in 2015.¹⁰

The KPIs for SSC have been tested and implemented in over 150 cities worldwide.¹¹ In the period 2019 to 2023, UNECE foresees the evaluation of 17 Norwegian cities, as well as Grodno (Belarus), Bishkek (Kyrgyzstan), Tbilisi (Georgia), Tirana (Albania), Podgorica (Montenegro), Almaty (Kazakhstan), and Nur-Sultan (Kazakhstan).

The 91 KPIs for SSC are at the intersection of the three dimensions of sustainability (economy, environment, and society), and information and communications technology (ICT). The KPIs for SSC are outlined in the “Collection Methodology for Key Performance Indicators for Smart Sustainable Cities”¹². In the process of the evaluation of the city against the KPIs for SSC, the KPI values are verified¹³. The outcome of the data provided by Rana is in the “U4SSC Verification Report – Rana, Norway”.

In line with the verification report, the graph below visualizes the performance of the city against the KPIs for SSC. Succeeding discussions outline the performance of Rana in relation to the three dimensions of the KPIs – economy, environment, and society and culture, and the relevant city actions, with a view to identifying the challenges and opportunities for making Rana smarter and more sustainable.

¹⁰ The KPIs for SSC standard developed by UNECE and ITU was endorsed by the UNECE Committee on Urban Development, Housing and Land Management in 2016 (ECE/HBP/2016/4) and was brought under the United for Smart Sustainable Cities (U4SSC) initiative. U4SSC has 16 United Nations partner agencies and supports the evaluation of performance of cities using the KPIs for SSC and the implementation of smart sustainable city solutions through the development of guidelines, studies, city action plans and capacity building events.

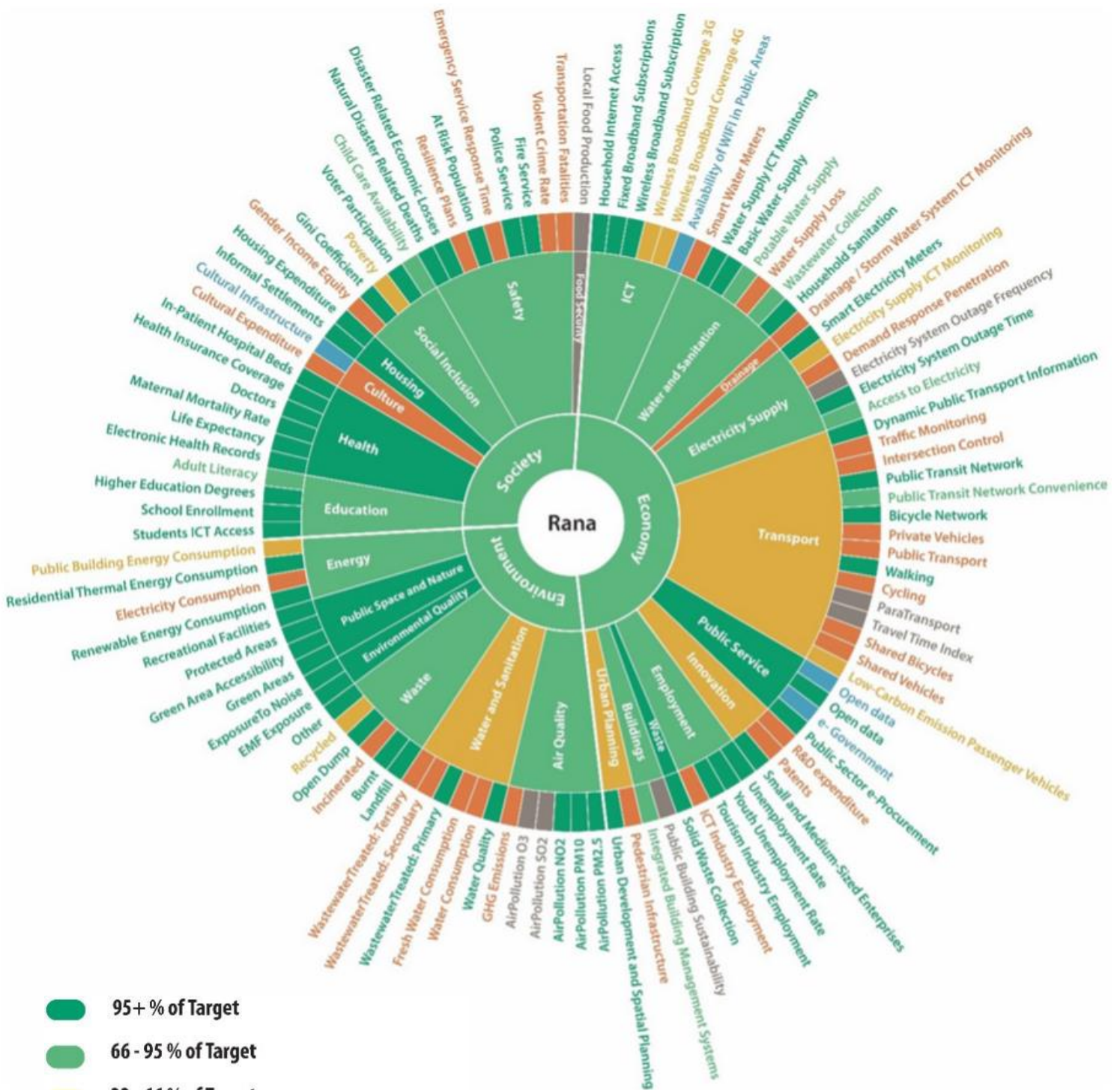
¹¹ This includes for instance, Voznesensk (Ukraine), Goris (Armenia), Pully (Switzerland), Dubai (United Arab Emirates), Singapore (Singapore), Shanghai (China), Buenos Aires (Argentina), Moscow (Russia) and many others.

¹² Available at <https://www.unece.org/fileadmin/DAM/hlm/documents/Publications/U4SSC-CollectionMethodologyforKPIfoSSC-2017.pdf>

¹³ The KPIs “verification” is the process of verifying the accuracy of data that will be used for the evaluation.

Graph 1

The performance of Rana against the Key Performance Indicators for Smart



Sustainable Cities

Economy – an overview

The city of Rana plays a key role in initiating and facilitating economic development, both in the city and in the broader region of Helgeland. It develops infrastructure projects that improve regional competitiveness and create green, efficient transport solutions that strengthen the city of Rana and the surrounding region as a hub for business, trade, transport and tourism. Important achievements of the city over recent years include upgrading the European route 6 and European route 12 motorways. The construction of a new airport is expected to strengthen the development of the city and the region in the coming decades.¹⁴

Rana is the centre for regional hospital services and has recently reorganized the school structure to prioritize high quality education and to prevent students from dropping out in upper secondary school. The city has recently built a new school and a new nursing home. It is also working on the upgrading and maintenance of public buildings, including schools, as well as upgrading and maintaining parks, roads, hiking trails, the water and wastewater systems including a new water supply system for two residential areas and developing a new sewage treatment plant. A regional university campus, student housing, new sport halls and the regional Museum & Science Centre have recently been opened in Rana. The city is also working on the regeneration of three new parks and has recently developed a new seafront recreation area.

The city has made considerable efforts to improve the efficiency of public services and promote the economic development of the city. Digitization, welfare technology and innovation in public services have been important in the most recent development programme and will continue to be so in the period from 2020 to 2024.

The key development priorities of Rana include improving employment levels, innovation output, and the sustainability of buildings, as well as improving public sector services and water and sanitation infrastructure (e.g. it will gradually upgrade the water supply system to reduce water supply loss). The establishment of a battery factory in the city is expected to provide up to 2,500 more jobs. Building a deep-water quay and increasing the number of study programmes at the local campus will also support the economic development of the municipality. In the years to come, Rana will also prioritize a gradual upgrading of the water supply system to reduce water supply loss.

The city aims to further reduce the reliance of inhabitants on private vehicles by ensuring that any growth in the city is matched with an expansion of transport infrastructure, thus limiting the need for private vehicles. This particular solution takes the form of an agreed contract between the national government and the municipality.¹⁵

KPI evaluation results – Economy dimension

The evaluation of Rana against the KPIs for SSC revealed an overall positive outlook in relation to the indicators on economy, such as employment levels or access to ICT infrastructure. Unemployment in the city is very low at 1.8 per cent, and youth unemployment is also low at 2.9 per cent. Almost all households (98 per cent) have internet access. The city has a high rate of wireless broadband subscriptions at 144,000

¹⁴ Financial plan and budget 2020-2023

https://www.rana.kommune.no/organisasjon/planer_budsjett_regnskap/SiteAssets/Sider/Budsjett_regnskap/Budsjett%20og%20%C3%B8konomiplan%202020-2023%20KST%20vedtak.pdf

¹⁵ <https://www.regjeringen.no/no/tema/kommuner-og-regioner/by--og-stedsutvikling/Byvekstavtaler/id2454599/>

subscriptions per 100,000 inhabitants. While this indicates a high level of accessibility to ICTs, the wireless broadband coverage from 3G and 4G is relatively low at 46 per cent.

On other areas pertaining to the economy dimension of the KPIs, the evaluation showed that citizens have: good access to electricity supply and to water and sanitation infrastructure, a reliable waste collection system, and a strong digital public service provision. Access to electricity is relatively high at 87.8 per cent, and the implementation rate of smart electricity metres is very high, as 98.1 per cent of all electricity metres in Rana are smart electricity metres. However, only 42.2 per cent of the electricity supply network is monitored by ICTs. While no data was reported on how frequently electricity outages occur, the average electricity outage lasts for only 33.9 minutes, suggesting a stable electricity connection for the inhabitants of the city.

All households in Rana are served with regular solid waste collection. Another well-scoring area is access to public services – 100 per cent of the data sets of the city are publicly available, and many services offered by the city administration are available online, suggesting a high level of transparency in the public sector. A basic water supply and household sanitation are both available to 100 per cent of Rana households, and 100 per cent of its water supply system is monitored by ICTs. Some 90.8 per cent of the water supply in the city meets the criteria of the World Health Organization for being potable. However, the water supply loss in Rana is at very high; 37.1 per cent of water is lost in the water supply network of the city.

On transport infrastructure, the KPIs for SSC indicate that the city has an extensive public transport network, with 2,154 km of network per 100,000 inhabitants – for comparison, per 100,000 inhabitants, Paris has only over 200km of public transport and Belgrade has over 400km.¹⁶ Inhabitants of the city with very convenient access to this network stands at 79 per cent. Low-carbon emission vehicles make up 3.9 per cent of the vehicles in the city. The bicycle network is similarly extensive, and the highly accessible dynamic public transport information facilitates use of the public transport system. However, despite good access to public transport infrastructure, the use of public transport and cycling as transport means are both relatively low. Out of the total journeys to work, only 4 per cent are by public transport and 3 per cent by cycling. The percentage of journeys taken using private vehicles is very high at 71 per cent of the city total. Currently, there is also no scheme for bicycle or vehicle sharing in the city.

¹⁶ This particularly high number is a result of Rana's low population density being spread out over a large geographic area, necessitating an extensive public transport network.

Environment – an overview

Rana aspires to become a world-class capital of "green" industry. It works together with its inhabitants, industry, and business to develop a "blue" and "green" infrastructure solutions (that is, infrastructure that adversely affects neither the sea and ocean nor green spaces and flora) and pursues policies and strategies that address the challenges facing the city in light of extreme weather conditions and climate change.

The MIP located in the city uses hydro power as a main source of energy, decreasing the carbon footprint of the site and making it lower, in comparison to other global industry sites. The current master plan of Rana envisages a "green" shift, that is, a reorientation of the city development strategies towards making the city climate neutral. It entails: the development of climate-friendly solutions for transportation, construction and land use; the reduction of the use of private vehicles; the promotion of the use of electric vehicles; improving public transport infrastructure; and the provision of new pedestrian and cycling routes. The city will also continue upgrading and maintaining city parks and public buildings using sustainable and environmental friendly materials.¹⁷ Rana is also a global leader in energy storage, and in developing and implementing waste to energy solutions (homes in the city are heated using heat from waste processing). The city is home to Freyr, a company that is building next-generation green batteries.¹⁸

The city launched a programme that aims to reduce air pollution and to improve drinking water quality. The programme entails mapping water recipients to improve water quality in accordance with the requirements of the EU Water Framework Directive¹⁹. The city established two new parks and redeveloped part of the sea front. Furthermore, the city is constructing energy-friendly primary schools in fossil-free solid wood and in climate-friendly construction sites. To increase waste sorting, it established a new waste disposal facility, reduced the use of plastic and obtained a new road-sweeper truck to reduce road dust.

In the coming years, the city will prioritize investments in a new sewage treatment plant to upgrade the drinking water pipe infrastructure. It will establish new water supply systems in two residential areas and upgrade the reserve waterworks supply and use the public procurement rules and climate budget as a tool for inducing investments in sustainable development.

KPI evaluation results – Environment dimension

The performance of Rana in the environment dimension reveals good access and high availability of green areas. Rana has nearly 1.6 million hectares of green space per 100,000 inhabitants and nearly half a million square metres of recreational facilities per 100,000 inhabitants. Some 97.6 per cent of the inhabitants of the city have access to these extensive green spaces.

The percentage of protected natural areas in the city is 91.3 per cent. Concerning air quality, the evaluation points to a low level of particulate matter emissions (PM 2.5 and PM 10) and NO₂ in the city (the levels do not exceed recommended maximum levels). However, no data was provided on the levels of SO₂ and O₃. The greenhouse gas (GHG) emissions in Rana are rather high at 26.9 tonnes of CO₂ equivalent per capita. Regarding energy supply and use, the electricity consumption levels are high at 90,241 kWh per year per capita. The high levels of GHG emissions and electricity consumption likely reflect the energy-intensive

¹⁷ Municipal plan for climate and energy 2015-2019

https://www.rana.kommune.no/natur_og_miljo/klima/PublishingImages/Sider/side/Klima-%20og%20energiplan_2015_2019.pdf

¹⁸ <https://www.freyrbattery.com/>

¹⁹ The EU Water Framework Directive (2000) - https://ec.europa.eu/environment/water/water-framework/index_en.html

nature of the industry of Rana. Energy consumption of public buildings is also relatively high, however 100 per cent of this electricity comes from renewable sources.

On solid waste management, the evaluation demonstrates that none of the solid waste goes to open dumps or is burnt, and very little waste is put into landfills (3.2 per cent of all solid waste). A large proportion of the solid waste in is incinerated (63.3 per cent), and 33.5 per cent is recycled. Finally, on water and sanitation infrastructure, the evaluation points out that drinking water quality in the city is very high and 100 per cent of wastewater receives primary treatment. However, water consumption levels are also high at 462.5 litres per day per capita. The city does not face challenges relating to overexposure to electromagnetic fields, and only 1.43 per cent of the population is regularly exposed to excessive levels of noise.

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Society and culture – an overview

Development objectives of Rana focus on improving the quality of life. Over last few years, the city has been working towards the delivery of health-promoting services, facilitation of sport and outdoor activities, investing in new sport halls, upgrading of hiking and skiing trails, and provision of good drinking water quality, all of which have been important achievements. Also, the establishment and upgrading of three new parks and a new seafront in the city are important steps that have been taken for the well-being of the people and public health. The city has also invested in improving the quality of education with a view to prevent dropouts of students from secondary schools and to reduce social inequalities.

All the kindergartens and schools in the city are classified as health-promoting kindergartens and health-promoting schools, to promote daily physical activity, social inclusion and access to healthy food. Free and healthy breakfasts and lunches in the upper primary schools have been prioritized. The city has also made attractive cultural activities and meeting places available for all and provided financial support to the foundation “BUA”, which lends activity and sport equipment to the city inhabitants free of charge. Last but not least the city has prioritized digital primary school learning; all students are given an iPad for educational use.²⁰

In the coming years, the city Rana is planning to further invest in better education, housing provision and safety. The municipality will continue several projects and programmes to promote safe and affordable housing for vulnerable groups. It will encourage the citizens (including new residents) to participate and co-create local initiatives and will establish a “co-creation lab” to improve collaboration and dialogue with businesses, academia and volunteers. Building and upgrading green areas and parks as attractive meeting places will also be prioritized.

KPI evaluation results – Society and culture dimension

On the society and culture dimension, the evaluation of Rana demonstrated high scores in areas such as healthcare, housing provision and education provision. School enrolment in the city is at 99.5 per cent, all students in schools have access to ICTs, and over one third of the city residents hold university degree.

Another area of very high performance relates to healthcare provision. Residents of the city benefit from a universal healthcare coverage, have good access to doctors, and availability of hospital beds is high. These can explain the high life expectancy of 81.2 years and the zero recorded maternal deaths during childbirth in the city.

In addition to education and healthcare, the housing situation of the municipality is very strong, as only 0.05 per cent of the population live in any sort of inadequate housing and only 15 per cent of the average amount of income is spent on housing.

There are also suggestions of strong socio-economic inclusion in Rana, as the municipality has a very low Gini coefficient of 0.2 (indicating a low level of economic disparity between the most wealthy and the least wealthy). Voter participation is high: 63.3 per cent of eligible voters participated in the most recent elections. Additionally, just under 80 per cent of pre-school aged children have access to day care facilities. There are also some suggestions of strong performance in the area of safety; none of the population lives in disaster-prone areas and the fire service is very well-staffed at 128.9 fire service officers per 100,000 inhabitants.

²⁰ Municipal Master Plan 2017-2027

However, the areas of social inclusion and safety (of the society and culture dimension) also showed weak performance in some respects. The KPI evaluation suggests that gender income disparity is an issue, females earn 26 per cent less than what males earn. Moreover, while the figure is relatively low, it is worth noting that 2.8 per cent of the population lives in poverty. The safety category showed some areas which are less performing. The average emergency service response time is long at 16.7 minutes and the rates of violent crimes and traffic fatalities are relatively high at 950 per 100,000 inhabitants and 8 per 100,000 inhabitants, respectively. However, due to the way crimes are recorded in Norway (each individual instance of violence is recorded as a separate case and cases that did not go to prosecution are included in the count), the actual violent crime rate may be lower.

Finally, Rana currently does have resilience plans in place, but they do not comply to the Sendai Framework for Disaster Risk Reduction. When the plans are next reviewed, the municipality will ensure that they are guided by this framework.

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Part IV Funding and financing for urban development

Rana has identified a range of challenges which constrain to the funding and financing for urban development. These include the irregularity in financial transfers from the national budget to the local budget, as they constrain planning for the delivery municipal infrastructure and services, and additional spending incurred by building a new airport. Therefore, upgrading and maintenance to sustainable standards of roads, municipal buildings, water and wastewater system, residential areas and parks poses a financial challenge for the municipality. Measures to prevent increased exposure to extreme weather, landslides and damages from floods present challenges in funding and financing sustainable development. Added to these, digitization of municipal services is also a financial challenge.²¹

Some of the key achievements of Rana on funding and financing sustainable development are the plans to establish a new hospital structure in the region, and the establishment of new large airport and battery factory. Further key achievements are building a new seafront in the city; upgrading parks and recreation areas; investing in new sport halls, road-sweeper truck and fire engine; upgrading schools, building a new nursing home and a new school; ; developing measures to improve environmental status in the fjord; and upgrading of public buildings and the water and wastewater system.²²

²¹ Perspective analysis and Economic plan 2020-2023 -

https://www.rana.kommune.no/organisasjon/planer_budsjett_regnskap/Documents/Perspektivanalyse%20Rana%20kommune%202020-2023.pdf

²² Annual account and annual report 2019

https://www.rana.kommune.no/organisasjon/planer_budsjett_regnskap/SiteAssets/Sider/Aarsmeldinger/%C3%85rsregnskap%202019%20Rana%20kommune.pdf

Part V Recommendations

With over 26,000 inhabitants, Rana is the third largest city in northern Norway and a centre of industry in the region. The implementation of the 2030 Agenda for Sustainable Development and accelerating progress towards the achievement of SDGs is a key priority for the city as it invests considerable resources in developing its innovation base, improving social cohesion and decreasing its environmental footprint.²³

Over the last decade, Rana has effectively developed and used ICTs to leverage progress towards sustainable development. It restructured and digitalized public services and made improvements to transport and infrastructure, with a view to become a hub for business, trade, transport and tourism. The construction of a new airport is expected to bring new visitors and businesses to the city and to the region.

Rana aspires to become a world-class capital of "green industry". It has wide-reaching plans to reduce reliance on private vehicles powered by fossil fuels, to encourage use of public transport, to improve pedestrian and cycling infrastructure, to improve the system of air quality monitoring and many others. Rana runs several projects and programmes to promote safe and affordable housing for vulnerable groups, and it has upgraded hiking and skiing trails in order to facilitate outdoor sports. In recent years, focus has been given to assuring high quality education and to preventing dropouts in secondary schools, primarily through early intervention.

The city of Rana was evaluated against the KPIs for SSC in 2019 and 2020. The evaluation outlines the performance of the city in relation to indicators pertaining to the economy, environment and society and culture, measuring its progress towards the SDGs. Outcomes of the evaluation are presented in the "U4SSC Verification Report – Rana, Norway"²⁴. Based on the verification report and the review of documentary data including information provided by the city, Rana is recommended to:

- *Improve water, sanitation and drainage infrastructure*

Addressing the unsustainable consumption of natural resources is a pre-requisite for the successful implementation of the 2030 Agenda for Sustainable Development in the UNECE region, and is one of the key principles of urban management in the twenty-first century and the circular economy. It requires cities to take decisive action to develop and implement urban policies and solutions that promote sharing, recycling, refurbishing, re-using, replacing, and digitizing the use of natural resources.

Water is one of the key natural resources of Rana. The quality of water and the efficiency and effectiveness of water and wastewater infrastructure and facilities have a considerable impact on the quality of life and the environment in the city. As the evaluation indicated a need to decrease the loss of water from the supply system, the city is encouraged to develop and implement solutions that will improve the efficiency of water and sanitation infrastructure and extend its lifespan. The high level of water supply loss is one contributing factor to the high level of water consumption in the city. Rana is encouraged to further invest in the ICT monitoring of its urban water networks, by introducing more smart water metres and setting up a drainage and storm water ICT monitoring system, in order to improve the efficiency of water management in the city. Last but not least, the city is also encouraged to further engage with residents and to work with planners to decrease the use of water resources by

²³<https://www.rana.kommune.no/servicetorget/Sider/side.aspx>

²⁴ Available on the ITU website: <https://www.itu.int/pub/T-TUT-SMARTCITY-2020-42>

households, and to develop designs that facilitate, for instance, the recycling of water²⁵. These design choices may include a water system that only draws on natural water resources to the extent that they can be regenerated, uses standardized pipes and metres to ensure that equipment can be swiftly and easily replaced, and shares infrastructure across sectors, for example telecommunications companies using draining trenches for fibreoptic internet cable.

- *Improve sustainability of public buildings and decrease energy consumption*

Improving the sustainability of public buildings also improves the quality of the natural environment and the quality of life in cities. Buildings account for a significant proportion of GHG emissions and resource use in a city. Developing, operating, refurbishing and maintaining public buildings consumes a high level of energy.

The high use of energy in buildings is associated with adverse effects on the environment, especially when the production of energy is based on fossil fuels²⁶. Improving the energy performance of housing contributes to an increased comfort of living and reduced energy bills, and more broadly, it alleviates fuel poverty and mitigates GHG emissions while creating jobs²⁷.

In line with the KPI evaluation, the city is encouraged to take steps to decrease the levels of energy consumption and to improve the overall sustainability of public buildings. This concerns especially the energy efficiency of the old building stock and office buildings, the life cycle energy (primary) requirement²⁸ of which is in the range of 250–550 kWh/m² per year (in comparison to the conventional residential buildings, which have the life cycle energy primary requirement at 150–400 kWh/m² per year).

The city is encouraged to work closely with the national government, business community and academia to identify opportunities for energy saving (for instance, the reduction of energy demand during the life cycle of the building) and to develop new technologies that allow sharing, recycling, refurbishing, re-using, replacing, and digitizing the use of energy.

- *Improve access to public transport infrastructure*

A well-designed and efficient public transport system is the backbone of sustainable and smart urban development. It prompts equal distribution of the economic benefits of urbanization and facilitates the reduction of socio-economic inequalities in cities. Over recent decades the development of transport infrastructure has benefitted from access to innovative ICT technologies and solutions, which help provide public transport information in a more dynamic way, including better traffic monitoring, intersection control, and the development of intelligent intersection management systems in cities.²⁹

²⁵ U4SSC: A guide to circular cities, June 2020 <https://www.itu.int/en/publications/Documents/tsb/2020-U4SSC-A-guide-to-circular-cities/index.html#p=2>

²⁶ This is not the case in Norway as the main source of energy in the country is hydropower.

²⁷ <http://www.unece.org/info/media/presscurrent-press-h/sustainable-energy/2018/unece-studies-and-networks-will-help-reduce-buildings-energy-consumption/doc.html>

²⁸ Life cycle energy (primary) requirement allows is the assessment of the energy needs of buildings throughout its life cycle.

²⁹ Elnaz Namazi, Jingyue Li, and Chaoru Lu, "Intelligent Intersection Management Systems Considering Autonomous Vehicles: A Systematic Literature Review," *IEEE Access* 7 (2019): 91946, <https://doi.org/10.1109/ACCESS.2019.2927412>.

The evaluation of Rana against the KPIs for SSC reiterates the city priorities to further invest in transport infrastructure, especially to improve traffic monitoring and to increase the share of low carbon emission passenger vehicles (currently at 3.3 per cent of all vehicles). It is also important to improve the modal split share, including increasing journeys made by public transport and cycling while reducing the number of journeys done by private vehicle. This requires taking into account a range of factors: the costs of owning, driving and parking private vehicles, as well as the quality and cost of alternative transport modes such as public transport and cycling, to develop relevant solutions.

- *Improve solid waste management*

Solid waste treatment and waste collection have considerable influence on the quality of life and the environment. The disposal and treatment of waste not only consumes land and energy but has a particularly negative impact on air quality³⁰.

The city is encouraged to carry out “circular actions” to reduce the quantity of waste in cities. These can include actions that promote responsible consumer behaviour such as avoiding single-use plastic, and promote waste recycling in such a way that waste emerging as a result of one production process can be used as an input (materials or energy) to another production process. This allows the creation of closed loops both within and across industries, which in turn enhances circularity in cities.

The city should decrease the amount of waste put into sanitary landfills and to collaborate with the national government, business community and academia (i) to develop infrastructure and technologies that enable the use of waste for energy generation and (ii) to promote sustainable material cycles via design control to ensure a more productive use and reuse of materials.

Finally, urban safety and security are central elements to smart and sustainable development and are determined by the effectiveness of services such as the police service, fire service and medical services. Therefore, the city is also encouraged to improve the access and availability of these services and to develop solutions that take into account their delivery speed, especially considering the additional challenges posed by the COVID-19 pandemic.

As importantly, given the abundance of urban data gathered for the purpose of the evaluation of the performance of Rana against the KPIs for SSC, and the determination of the city in achieving the SDGs, the city is encouraged to review regularly the implementation of the 2030 Agenda for Sustainable Development at local level.

Resources

On improving water and sanitation infrastructure,

- U4SSC: A guide to circular cities (2020)
- Guide to Implementing the Water Convention (UNECE, 2013)

On improving urban safety,

- *Governing Safer Cities: Strategies for a Globalised World”* (UNODC, 2016)

³⁰ Open dumps emit a significant amount of methane and, when burned, waste contributes to carbon dioxide emissions. Both methane and carbon dioxide are greenhouse gases, the emission of which should be decreased, in line with international standards such as the United Nations Framework Convention on Climate Change (2016).

On addressing social inequalities,

- Geneva UN Charter on Sustainable Housing” (UNECE, 2015)

On strategies to improve mobility and transport in the city,

- From Amsterdam to Paris and beyond: the Transport, Health and Environment Pan-European Programme (THE PEP) 2009-2020 (April 2014)
- Together with UNECE on the road to safety: cutting road deaths and injuries in half by 2020 (UNECE 2015)
- Riding towards the green economy: Cycling and green jobs (UNEP 2017)
- Transport for Sustainable Development: The case of Inland Transport (UNECE 2015)
- Working together for Sustainable and Healthy Transport: Guidance on Supportive Institutional Conditions for Policy Integration of Transport, Health and Environment (UNECE 2008)

Contact

For any questions or inquiries on the Sustainable Smart Cities Profile, please contact Ms Gulnara Roll, UNECE, at gulnara.roll@un.org.

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