E-HEALTH CROATIA

LIFE CYCLE ASSESSMENT OF ICT ENABLEMENT POTENTIAL

STAKEHOLDERS:
The Ministry of Health and Social Welfare of the Republic of Croatia, Croatian Institute for Health Insurance and the Croatian National Institute of Public Health

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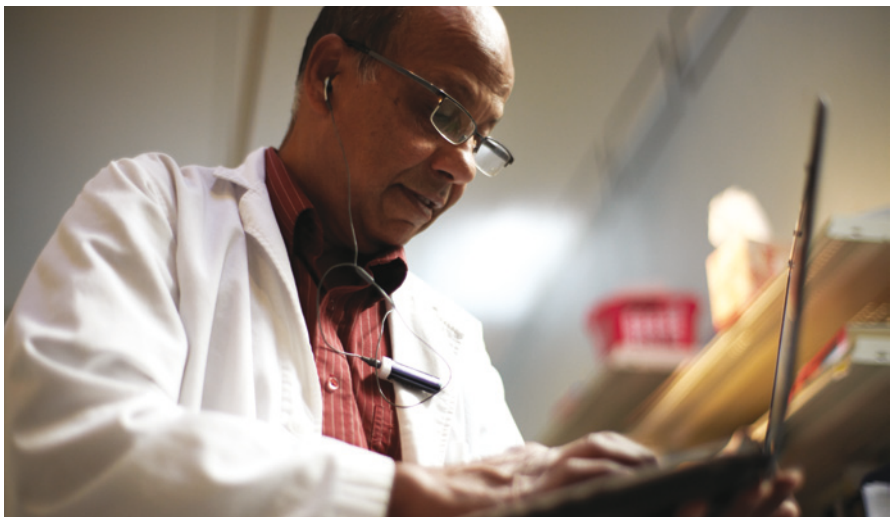
ENABLING EFFECT:
Travel substitution and dematerialization (substance elimination)

AREA:
Health



SOLUTION

ICT solutions can have significant transformative impacts on energy consumption and CO_2 emissions, as seen in an e-health system provided by Ericsson in Croatia. The Croatian government wanted to offer to its citizens a more efficient health information system. A solution was developed with the goal of integrating healthcare processes, information management and business workflows.

Connecting 2400 primary healthcare teams in the 20 counties and the capital, Zagreb, the Healthcare Networking Information System (Figure 1) provides electronic reporting and booking, updates patient records, and digitalizes prescriptions and referrals, so they can be sent to pharmacies, hospitals and laboratories without the need for printouts.

POTENTIAL REDUCTION RATIO

1:45

depending on system boundary.

potential reduction ratio is
direct ICT emissions (tonne CO_2e)
330 +
in relation to the enabling effects
(tonne CO_2e)
15 000 -

OBJECTIVE

The purpose of the study was to understand the CO_2 reduction potential for adopting e-health widely across Croatia. The intended audience for the e-health delivery system from Ericsson is policy makers in Croatia. Since policy makers make long-term planning decisions on infrastructure and consider introducing policies to incentivize adoption, the scale of adoption for this study was quite large.

For more information on Ericsson's work with enabling ICT solutions, please visit:
www.ericsson.com\sustainability

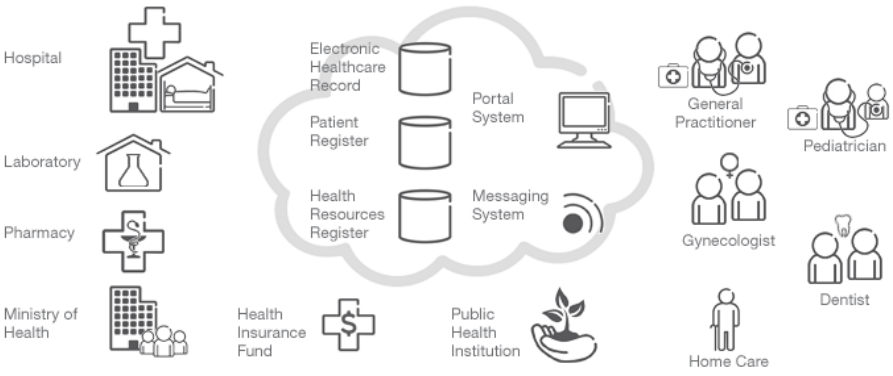


Figure 1: *The Healthcare Networking Information System*

	Primary	Secondary
+ Direct ICT emissions	Emissions from ICT equipment required for e-referrals and e-prescriptions	
- Enabling effects	Reduced private vehicle use Reduced paper use	Reduced public vehicle use Reduced vehicle production Reduced road construction *Reduced clinic use** *Reduced clinic construction**

Figure 2: *Potential effects of e-health delivery system implementation (Source: Evaluating the carbon-reducing impacts of ICT, GeSI 2010) *not considered in this case study*

SCOPE

In this case study, the ICT system included the software and equipment required for the e-health system. The components of the system were PCs and data centers. The Business As Usual (BAU) system covered the existing healthcare system, including all associated activities and emissions. Changes to these emissions resulting from enabling effects identified the relevant BAU components.

The Figure 2 summarizes all potential effects that were identified. The primary enabling effects of the e-health delivery system were reduced private vehicle use by eliminating unnecessary trips to the doctor and reduced paper use through the ability to prescribe online. Relevant components associated with these effects were private vehicles and paper. Adoption of an e-health delivery system could generate several potential secondary enabling effects. Many of them require greater time and scale of adoption to occur.

For instance, if the broader population were to reduce its use of public transportation, bus and train services could be run less frequently. Sufficiently widespread adoption could even cut public and private vehicle construction, as routes were cancelled, or families consolidated vehicle use. With fewer vehicles on the road, the need to construct or re-pave roads might also decrease. These effects would be beyond consideration when assessing an e-health system's impact on a single clinic, but given the national implications, these would be all relevant effects to consider when applying this methodology.

Additional effects could have been identified and included for assessment. Fewer patient visits could allow clinics to shorten their hours, reducing energy consumption. The e-health system would also help existing infrastructure to support greater numbers of patients per doctor/nurse/pharmacist, so as the Croatian population grew, a proportional expansion in number of clinics could be avoided.

RESULT

Calculations to arrive at the figures in Figure 3 used a mix of secondary and modeled data. The following assumptions were used:

- The e-referral service can reduce patient visits (approximately 12 million per year) by 50%.

- On average, patients travel 10km + 10km per visit. Twenty-five percent of patients travel by car; the other 75% by public transport.

- The e-prescription service can reduce paper consumption by 50%

Secondary and other data was used to determine average paper production and Croatian electricity differences from globally reported figures. Croatian demographic data was used to guide assumptions. As the e-health delivery system runs on PCs rather than a dedicated e-health device, a decision was also made to allocate emissions from the entire solution infrastructure to e-referral and e-prescription.

Taken together, the e-referral and e-prescription services have the potential to reduce CO_2e emissions by up to 15,000 tonnes per year while the two services only add 330 tonnes of CO_2e/year from operation and manufacturing activities.

The potential reduction ratio over a 20-year period is up to 1:45, depending on whether infrastructure is included and, if so, to what extent.

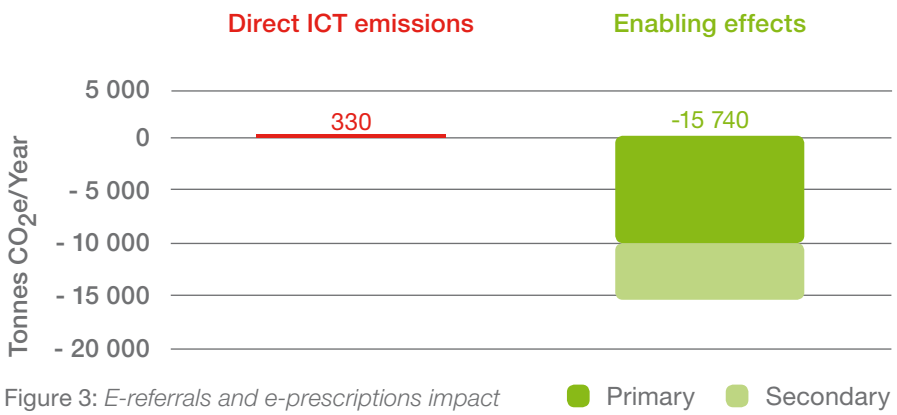


Figure 3: *E-referrals and e-prescriptions impact*