8 Kasım Dünya Şehircilik Günü 44. Kolokyumu

Kasım 2020

BİLDİRİLER KİTABI

TMMOB
Şehir Plancıları Odası

8 Kasım Dünya Şehircilik Günü 44. Kolokyumu
Kasım 2020

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Ä NW V RODUDN RNX\DELOHFHùLPL] &RYLG S
KDOH JHWLUHUHN \DUDWW ù HNRQRPLN WRS
WDUW PD\ KHGHßHGLN

$Ä O RWXUXPXPX]D ED ODPDGDQ ÓQFH NRORN
%XJÙQ PHYFXW SDUDGLJPDQ Q VÙUHNOL NUL]
VRQXÄODU HPHN SL\DVDV QGDNL ÓUJÙWVÙ]OH
QHIHV DODELOGLùLPL] KHU WDODQ HGLOPHVL
PXKDOLI EDV QD \DS ODQ EDVN ODUD PÙOWH
Ó]HOLQGH HWNLOHULQLQ ILLOHQ K¿O¿ GHYDP
YH PXKDOLI EHOHGL\HOHUH DWDQDQ ND\\XPO
\RN VD\ OPDV QD NDGDU LOHUOHPL ROGXùXQ
EDù PO NUL]OHU RUWDP QGD PHNDQ LVH KHP
ELU XùUDN KHP GH VRQXÄODU Q QHW RODUD
GXUX\RU %XUDGGDQ GRùUX NHQWOHULQ YH N U
KDIWD]PLUpGH \D DG ù P] GHSUHPLQ DUG QG
GXUXPX PDDOHVHI ÄRN DF ELU HNLOGH EL]H \

7ÙUNL\Hp\H VRQ \ O LÄHULVLQGH GDKL EDN
DVO QGD DÄ N ELU HNLOGH RNX\DELOL\RUX]
EX NUL]L D PDN LÄLQ ÓQH Ä NDUG ù \HJDQH V
LNWLGDU WDUDI QGDQ 7ÙUNL\Hp\L WHùHW JHÄ
NUL]LQLQ ELUÄRN HWNLVL\OH ELUOLNWH LQ DD

LÄLQ EHQLPVHQHQ GDKD ÄRN ERUFD GD\DO E
LQ DDW VHNWÓUÙ WHPHOOL ERUÄ NUL]LQH GD
JÓVWHUPHNWHGLU ¹ONH K¿O¿ ERUÄ NU
&RYLG VDOJ Q QGDQ ND\QDNO GÙQ\D NUL]L\C
NUL]OHULQL ÙVW ÙVWH \D D\DQ ELU ÙONH KDOL
IDL] SROLWLNDV \OD NRQXW VDW ODU QGDNL I
L ÄL V Q I LÄLQ KHU JHÄHQ JÙQ GDKD ID]OD ÓC
DQODP QD JHOL\RU

%X WDEOR LÄHULVLQGH JHUÄHNOH WLUGLùLPL]
D\ QGD Ä NW N *HOHQ ELOGLUL Ó]HWOHUL ÄRùX
NDWN NR\DFDN JÙQ ER\XQFD VÙUHFHN NROI
NÙUHVHO ÄDSWDNL EX NUL]OH PHNDQOD LOL NI
2WXUXPODU P] YH IDUNO WHPDWLN VXQX C
YHULPOL JHÄHFHùLQL XPX\RUXP %X YHVLOH\OH
NDW O PF ODU P]D WH HNNÙU HGHUHN DÄ O R

%X RWXUXPXPX]GD ÙÄ GHùHUOL KRFDP]OD EL
SROLWLND ED O NODU Q WDUW PD\ KHGHßHG
DOPD\DFDù] EX RWXUXP LÄLQ EX QHGHQOH KP
HVQHWPH RDQDù P] ROGX +HU NRQX PDF P]
ROPDV X\JXQ RDFDNW U VDQ U P RWXUXPXP
+RFDP]GDQ NDSLWDOL]PLQ NUL]LQL EXJÙQNÙ
NUL]OHULQ QDV O RNXQGXùXQX GLQOH\HFHùL]
NHQWVHO SROLWLNDQ Q NUL]LQL WDULKVHO S
GLQOH\HFHùL] 6RQ RDUDNVD)XDW (UFDQ +RF
NUL]LQLQ QHGHQOHULQL YH VRQXÄODU Q NHC
DNWDUP RDFDN 'DKD ID]OD YDNLW ND\EHW
KHP GH ED NDQ RDQ GHùHUOL KRFDP])LNUH\
+RFDP EX\XUXQ

) .5(7 %$.$<$ %X D DPDGD NUL] WHPHOOL EL
HKLU 3ODQF ODU 2GDV \ÓQHWLFLOHULQL NX
(ùHU H\OHUL DQODPDN ELOLQFH Ä NDUPDN JL
ÄDù UDUDN ED ODPDP] JHUHNLU =LUD DG \OD
.UL] GHùLO NDSLWDOL]PLQ NUL]L &RYLG pXQ
NDSLWDOLVW VLVWHPLQLQ GHULQOH HQ NUL]L \
LVWLVQD GHùLO NXUDOG U %LU \RO ND]DV GH
YH L OH\L LQGH LÄHULOPL GXUXPGDG U 2 ND
NUL]OHU GH NDSLWDOL]PGH D\Q HNLOGH LÄHU

Ó\OHVLQH PÙQGHPLÄWLU NL NDSLWDOL]P NUL]
SROLWLNDODU Q ELU VRQXFX RODUDN RUWD\D
.UL]OHUL ÓQOHPHN PÙPNÙQ ROPDG ù JLEL NDS
2 KDOGH NDSLWDOL]P QHGHQ NUL]OHU SH\GKO
%X DPDÄOD NDSLWDOL]PLQ WHPHO HùLOLPOHU
KDW UODWPDN JHUHNL\RU

%LULQFLVL NDSLWDOL]P ÙUHWLP YH \D DP DU
X\JDUO ù G U +HU H\L LQVDQ YH WRSOXP \D
SDUDO OD W U \RU H\OH WLUL\RU ELUHU WLP
ÓOÙ PHWDODUD GÓQÙ WÙUÙ\RU YH NDÄ Q OPD
NLQFLVL NDSLWDOL]P GDKLOLQGH ÙUHWLP L
GXUXPGDG U ¹UHWLP NXOODQ P GHùHUL LÄLQ
\DS O \RU ¹ÄÙQFÙVÙ NDSLWDOL]P Ä OJ Q YD
5HNDEHWH GD\DQ \RU ROPDV KHU NDSLWDOLV\
ÙUHWPH\H]RUOX\RU %LU NDSLWDOLVWLQ NDS
VÙUGÙUHELOPHVL EÙ\ÙPHNOH PÙPNÙQ WRSOD
PÙPNÙQ GROD\ V \OD VLVWHP V Q UV] EÙ\ÙP
V Q UV] WÙNHWLPL YDUVD\ \RU YH IDNDW EX
JLEL ELU]DPDQ JHOL\RU V Q UV] ÙUHWLP V Q
GXUPDN GL\H ELU H\ \RNWXU .DSLWDOLVW LO
ELUH\VHO LUDGHVLQLQ ELU N \PHWL KDUEL\HV
VLVWHPGLU %LU NXWXSWD \RNVXOOXN ÙUHWP
GHùLOGLU %H LQFLVL NDSLWDOL]P GDKLOLQ
GXUXPGDG U OL NLQLQ \ÓQÙ HNRQRPLGHQ W
WRSOXPX NRORQL]H HWPHVL VÓPÙUJHOH PH\
ROXPVX]OXNODUD NÓWÙOÙNOHUH ND\QDNO N
WRSOXPD \DEDQF OD \RU WRSOXPGDQ X]DNO
NDUDUODU ELUELULQGHQ EDù PV] \Ù] ELQOH
YHULOL\RU 'ROD\ V \OD ÙUHWLP DQDU LN ELU
EX HùLOLPOHULQ EX GLQDPLNOHULQ YH EX W
KDOH JHOL\RU %D ND WÙUUOÙ VÓ\OHUVHN NDS
YH LNL WÙUUOÙ NUL] VÓ] NRQXVXGXU %LULQF
GHQLOHQOHU ELU GH X]XQ GDOJDODU YH\D X]
%XQD \DS VDO NUL] GH GHQLOL\RU .RQMRQW
NUL]OHU <Ù]\ OGD ÄRN GDKD V N YH \RùXQ \D
%LU GH X]XQ GDOJDODU GHQLOHQOHU YDU 8]X
LVWLNUDUO ELU EÙ\ÙPH VH\UL L]OL\RU YH \DN
ELU GXUJXQOXN YH\D NUL] GÓQHPL L]OL\RU <D

NUL]OHU GHùLOGLU %LU G PÙGDKDOH\L SROL
pGH RUWD\D Ä NW YH NRORQ\DOL]POH VÓPÙ
\DS VDO NUL] LNL GÙQ\D VDYD YH ID L]POH D
NDSLWDOL]P \HQLGHQ \ O NDGDU VÙUHFHN E
WHNUDU \DS VDO NUL]H JLUGL YH \DNOD N \DU
QLKDL NUL] GL\RUXP

*HULFL HNRQRPLN YH DQWL VRV\DO SDUDGLJPD
UHVWRUH HWPHN PÙPNÙQ ROVD GD NL EX ÙFUH
YH YHULPOLOLN DUW VDùODQDPDG *HULGH
ÓQFHVL GÓQHPLQ SHUIRUPDQV QD XOD ODPDG
%XJÙQ NDSLWDOLVW GÙQ\D VLVWHPL LÄLQGH E
NDU ODQDELOLU GHùLO =LUD NUL] QRUPDO G
GHPHNWLU DPD QRUPDOH GÓQÙ Ù GH LPD HGH
E\SDVV \DS ODUDN NDOS PHVDM \DS ODUDN D
L WH WD GÙ ÙUÙOÙU YHVDLUH IDNDW GÙQ\D
GXUXPXQ ÄÓNÙ NHOLPHVL\OH NDU ODPDN JHU
H LùLQ D OG ù Q LPD HGL\RU EX DQODPD JH
YHUPHPHN JHUHNLU =LUD ELU VRV\DO IRUPDV
ÄÓNÙ Ù ELU FDQO Q Q ELU NX XQ ELU LQVDQ
]DPDQD \D\ OP ELU VÙUHÄ ELU HùLOLP RODUD
JLGHQ ÙONHOHULQ ED QGD JHOL\RU %ÙWÙQ JÓ
\HJDQH QHGHQL GH VDGHFH SROWLN VODPF S
X\JXODPDV GHùLO DVO QGD HNRQRPLQLQ WHK
HGL\RUGX . U OPD 2FDN NDUDUODU (\OÙ
7ÙUNL\H G D DÄ ODFDN LKUDFDW YE EÙ\Ù\HF
PHGHQL\HWLQ VHYL\HVLQLQ ÙVWÙQH Ä NDFDN\
NRPSUDGRUOD PD WHUFLKL\GL 2 GÓQHPGHQ ED
HWWL (NRQRPLQLQ LÄ HNOHPOHQPHVL D QG
EÙ\ÙGÙ $.3 VRQ \ OGD RQX GDKD GD GHULQG
EXOXQX\RU $UW N ELOGLN SROWLNDODUOD E
IDNDW NDSLWDOL]P ÄÓNÙ\RU GHPHN NHQGL NH
<D VHQ ÓOGÙUÙUVÙQ \D GD R VHQL ÓOGÙUÙU
YH EX L LÄLQ EXJÙQ SRWDQVL\HO PHYFXW (ù
ÙUHWLP WDU] YHULOL \DVDO NXUXPVDO ÄHUÄ
WHPHO LKWL\DÄODU Q VX J GD NRQXW JL\LP
DVJDUL GÙ]H\GH ELOH NDU OD\DPD] GXUXPD J
HWPHN JHUHNHFHNWLU 6LVWHPLQ EXJÙQNÙ GX
GXUXPD GHQN JHOL\RU *UDPVFL q2UJDQLN NU

JÓUÙQPÙ\RU YH EX DODFDNDUDQO NWD FDQDYD
NDSLWDOL]PLQ LÄLQGH ELU NUL] GHùLO GRùUX
NUL] VDGHFH HNRQRPLN NUL] GHùLO VRV\DO N
HWLN GHùHUOHU NUL]L YH EXQODU Q WDPDP 6
HGHQ ELU NUL] ÙVWHOLN EXQODU Q KHU ELUL
VHIHULQGH ÄÓ]GÙùÙQGHQ GDKD ÄRN VRUXQ \DU
\HWHUL NDGDU GHùHU ID]OD GHùHU DUW GHù
\DùPDOD\DUDN \RO DO \RU 'DKD GRùUXVX \RO D
ERUÄOX LUNHWOHU ERUÄOX EHOHGL\HOHU E
EHOLUOL GÙ]H\GH ELU EÙ\ÙPH ROPDGDQ \DQL
ÓGHQHELOLU ROPDNWDQ Ä NDU YH Ä N \RU X
ERUFXPX] YDU QVDQO ù Q GRùD\D ERUFX YDU
ND\QDNWDQ GDKD ÄRùXQX WÙNHWL\RU <DN Q
JHOL WLUGL ELOLQGLùL JLEL JHÄHQ \ O GÙQ\D
\ O Q D\ Q ERUÄOX JHÄLUHFHùL] DQODP QD J
ELU D\ ÓQÙQGH R NRQXGD PXDV U PHGHQL\HW
VRUXQX GD ÄÓ]ÙOHELOLU GHùLO LNOLP NUL]L

2 KDOGH EX ÄÓNÙ WDEORVXQGDQ QDV O Ä N
<Ù]\ O Q ÙÄÙQFÙ ÄH\UHùLQGH pOHUH NDGDU
WRSOXPXQGD ÓQHPOL ND]DQ PODU HOGH HWW
JÙYHQOLN HPHNOLOLN KDNN ÙFUHWOL WDWL
pGHQ LWLEDUHQ GDOJD NHVLQ RODUDN L Ä
VDYXQPDGD ND]DQ PODU Q ELUHU ELUHU ND\E
ILQDQV \ÓQHWLPL\OH KHU ÙONHQLQ L ÄL V Q ßD
NDSVDPO VDOG U V NDU V QGD GLUHQL OHU
PXKDOHIHW RUWD\D Ä NW)HPLQLVW KDUHNHW
HGLOHQ NÓ\OÙOHU ÄLIWÄLOHU \HQL PÙFDGHO
PÙFDGHOHVL EÙ\ÙPHNWH JHQÄOHU DUW N VDI
EÙ\Ù\HQ LNOLP NUL]LQH PLO\RQODUFD JHQÄ L
RUWD\D NR\DELOGL .DSLWDOL]PLQ VDOG U V
DOPDV

' /(. .5%8/87 6DQ U P)LNUHW +RFDQ Q EDùOI
EDùODQPD\ GHQH\HFHN DUNGD ODU P] LVWH
)LNUHW +RFD EDùODQG ù QGD WHNUDU RUDGDQ
NHQW VRV\RORMLVL SURIHVÓUÙ +DWLFH .XUW
QDV O \ÓQHWWLùLQL YH\D \ÓQHWHPH\HHN NH
VRV\RORMLVL OLWHUDWÙUÙ Ù]HULQGHQ DNWDU

3URI 'U +$7 &(.8578/8 $<'$/ 6HODPODU ÓQFH
GDYHW HWWLùLQL] LÄLQ EX GDYHWWHQ RQXU G
WH HNNÙU HGHULP

%X VHQHNL WHPD JHUÄHNWHQ)LNUHW +RFDQ
DUNDGD ODU P] Q GD VÓ\OHGLùL JLEL NUL] WH
EXQX DUW N KDQL NUL]OH GH DÄ NODPDN]RU
GHULQ ELU NUL] GHQLOHELOLU %ÙWÙQ DODQ
Ù]HULQGH JHUÄHNOH HQ EÙWÙQ WRSOXPVDO LO
WDPDP QGD ELU NUL] YDU JLEL JÓUÙQÙ\RU +HU
LQVDQODU GD EX NUL]L \D \RUODU DNDGHPLN
JD]HWHFLOHU YH GLùHU RUWDPODUGD GÙ ÙQVH
2 QHGHQOH JHUÄHNWHQ GH HKLUFLOLN DODQ
NRQX DFDù P LÄLQ R DODQGDNL NUL]L GH ELUD
QDV O JHOGLN EX NDGDU NHQWVHO SROWLND
YHUHPHPH]DIL\HWL \D GD NDUDU DODPDPD]DI
ELUD] EDNDQ ELU NRQX PD KD] UODG P EHQ GH
GHSUHPGH KD\DWODU Q ND\EHGHQOHUH YH K¿
LÄLQ KDQL ÄRN DF \ EL] GH LÄLPL]GH KLVVHW
SVLNRORMLN RODUDN VÓ\OHPHNWH \DUDU YDU
LOL NLOL \DQL GHSUHP ELU GRùD ROD\ YH LQ
DOPDGDQ Ä NDELOHFHN KHP SROWLNDODU YDU
GD ELU GHSUHP GHùLO FLQD\HW GHPHN GDKD
OD] P NHQGLPL]L VXÄODPDP] JHUHNL\RU SROL
ÓQHPOL ELU H\ LON FÙPOH\L RQD D\ UPDN LVW

LPGL NHQWVHO SROWLNDQ Q NUL]L GHGLùLPL
\HUHO LNWLGDU YH PHUNH]L LNWLGDU Q ELU J
SROWLND DVO QGD NHQWOHULQ VÙUGÙUÙOHEL
VÙUHNOL VL] GDKD ÓQFH GH KHS NRQX WXùXPX]
GHùL WLùL \DS ODU VL] RQXQ KDNN QGD ELU S
GHùL WLùLQH WDQ N ROGXùXPX] \DS ODU NHQW
ÄRN QHGHQOHUL YDU %XUDGD NRQX PD\DFDù]
IDUNO]DPDQVDO PHNDQVDO LOL NLOHU YDU
EÓ\OH ELU DODQ YH EX DODQGD SROWLND ÙUH
GHYLQJHQ YH UHNDEHW PHNDQ Ù]HULQGH ELU
]DWHQ]RUOXNODU Q ELOL\RUX] DPD ELU GH Ù
SROWLNDODU Q GD \D D\DFDNODU]RUOXNODU
]RUOXNODU ROGXùXQX ELOL\RUX] DPD EXQXQ
]RUOXNODU Q G QGDNL LNWLGDU UHNDEHWL \

LPGL EXQXQ WHPHO ND\QDù Q HVDV QGD Ó\
\HUHO \ÓQHWLPOHU GL\HOLP GDKD GRùUXVX \
\ÓQHWLPOHUH LNWLGDU DNWDU P \DQL LNWL
SD\OD P QGD \HUHO \ÓQHWLPOHUH GRùUX LN
DUWW ù Q ELOL\RUX] <DQL GÙQ\D ÓOÄHùLQGH
DO QDELOL\RUVD NHQGL KDNODU QD ROXPOX R
DODELOL\RUVD GHPRNUDWLNOH PHQLQ R NDGD
WRSOXPODUG U EXQODU GDKD GHPRNUDWLN \
DVO QGD EÙWÙQ GÙQ\DGD GD ÄRN VHUW PHUN
EHOLUOL]DPDQODUGD EHOLUOL DODQODU DÄD
DPD pOL \ OODUGDQ EHUL 7ÙUNL\HpGH GH G
\ÓQHWLPOHU OHKLQH \HUHO GHPRNUDVL OHKL
ELU HNLOGH JHOHQ EX GHPRNUDWLNOH PHQLQ
\HUHO \ÓQHWLPOHUGH \LQH DUWPDV Q Q pOD
LNWLGDU Q JHUL ÄHNLOGLùLQL JHUL DO QG ù
GHùL LNOLNOHU KXNXNL PHY]XDWODUGDNL GH
GDKD EÙ\ÙN N VP QD VDKLS ROPD LNWLGDU Q
EXUDGD EÙ\ÙN ELU LNWLGDU PÙFDGHOHVLQGH
RODUDN GD EXQX JÓUHFHùL]

LPGL EXUDGD EX QHGHQ ROX\RU %X LNWLGDU
DVO QGD ÄRN V Q UO ELU DODQGD VÙUUÙ\RU 2
PDU <DVDODU \OD PHNDQ Q ÙUHWLPL \DQL PL
ELU PDU <DVDV ROPDGDQ ELU RUPDQ DODQ G
RUPDQ PÙGÙUOÙNOHUL KHPHQ VL]H GDYD\ DÄ
HOL\OH EX W UQDN LÄLQGH VXÄODU L OHQHEL
ROX\RU 6XÄ DVO QGD DPD KXNXNL ELU ELÄLP
PH UXL\HWL ROGXùX LÄLQ EXQODU ELU VXÄ RO
\HUHO LNWLGDU DUDV QGDNL JHULOLPLQ YH JU
LPDU KDNODU LPDU PHVHOHOHUL ROX WXUX\
ÄHYUHQLQ ÙUHWLOGLùL \DS ODU Q ÙUHWLOGL
ELU VÙUÙ ÙUHWLPGHQ EDKVHGL\RUX] EX PHND
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LPDU KDNODU PÙFDGHOHOHUL Ù]HULQGH \ÙNV
RODQ \HWNLOHULQL GDKD GD JÙÄOÙ NXOODQD
SODQODPD SODQ \HWNLVL PHUNH]L YH \HUHO
0HVHOD HKLUFLOLN %DNDQO ù \D GD 72. p\H
PHNDQ Q Ù]HULQGH YDU RODQ KXNXNL VLVWHP
LVWLVQD PHY]XDWODU \DVODU GÙ]HQOHQL\R

VDQNL HKLUOHU VDGHFH LPDU HGLOHELOLU \H
JÓUÙOÙ\RU %X HQ EÙ\ÙN SUREOHPLPL] EXUDGD
DODQODU P] NHQGLPL]L ÙUHWWLùLPL] ÙUHWL
UHMLPLQ EÙWÙQ LGHRORMLN SROLWLN VÓ\OHP
VRV\RORMLN EÙWÙQ LOL NLOHULQLQ ROX WXùX
DLGL\HWOHULPL]LQ ROX WXùX ELU DODQ HVDV
ÓQHPOLVL EX ÙUHWLPLQ DODQ EÓ\OH \HUOHU
ER OXN GÙ]OHPOHU JLEL \DQL EL]LP HQ EÙ\ÙN
GHùLO PHUNH]L YH \HUHO LNWLGDU RGDNODU
]DPDQ SODQODPD GÙ ÙQFHPL]GH WDELL EÓ\OH
WXWX\RUXP DPD JHQHO RODUDN EÓ\OH ELU GÙ
GHGLùLP JLEL VDGHFH LNWLGDUODU GHùLO KHS
NHQWVHO GÓQÙ ÙP PHVHOHOHULQL GÙ ÙQÙQ K
ND]DQDFDù \DQL \HQL Ä NDU ODFDN .HQWVHC
SH LQGH NR X\RUX] %L] NHQWVHO PHNDQ EÓ\C
LNWLGDUODUD DWDPD\ ] KHSLPL]GH YDU YH EX
JHUHNL\RU %X SROLWLND\ \DSDELOPH JÙFÙ G
JHUHNWLUL\RU %X LUDGHQLQ ROX XS ROX PDPD
SD\ YDU LPGL Ó\OH ELU ÓUQHN YHUH\LP p
\DQL EXQD LPDU \HUHO \ÓQHWLPOHU UHIRUPX G
\HUHOH EÙ\ÙN \HWNLOHU YHULOGL %HOGH EHO
YHULOGL %X LPGL ED WD EDNW ù P]GD QH ND
LKWL\DÄODU QD JÓUH NHQGL RUDGD \D D\DQ Q
DNW ù \HULQ LKWL\DÄODU QD JÓUH LPDU NDUD
PRGHOL KD\ U EÓ\OH ROPDG GHùLO PL" <HUH
PHNDQ ÙUHWLPL JHUHNVL] PHNDQ ÙUHWLPL RO
VÓ\OH\H\LP KDQL VWDQEXOpX ELOGLùLP LÄLQ
HGHFHNOHU VWDQEXOpGD VWDQEXO PHUNH]G
EHOGH EHOHGL\HOHULQLQ LPDU NDUDUODU \OD
\LQH GÙ]HQVL] ELU ELÄLPGH \DQL SODQV] GÙ
GROGX %LU ED ND VL]H ÓUQHN YHUH\LP <DQL
GHùLOGL <LQH PHNDQ Q ÙUHWLPL Ù]HULQGHQ
ELU VÙUHFLQ NXUJXVX\GX DVO QGD \DQL GHPR
ÄHYUHVLQLQ PHWURSROWHQ ÄHSHULQ Ó]HOC
GHùLOGL PHVHOH ÄÙQNÙ NHQWOHU EÙ\Ù\HFHN
YH NHQWOHU EÙ\Ù\RU %X GDKD EÙ\ÙN ELU SRC
WDUW U] YH EXQX DU]X HGHUL] DPD EX X D
HGHELOHFHùLPL] ELU DODQ GHùLO JÓÄOHU YH
D] QGDQ EX K]O EÙ\ÙPHQLQ NRQWUROOÙ ELU

EX EHOGH EHOHGL\HOHULQLQ LPDU \HWNLOHU
VRQXÄODQG %X IDFLD ÙVWHOLN LPGL GHSU
ROX WXUX\RU

%LU ED ND ÓUQHN YHUH\LP Ó]HOOLNOH \LQH
pODUGDQ LWLEDUHQ KDWWD pOHUGHQ VWD
DODQ QGD GD GRùUXGDQ UHHO SROLWLN DOD
JHFHNRQGXODU JÓUÙOGÙ GHùLO PL" <DQL ELU
\D] \RUX] JHFHNRQGX ÄÙQNÙ K¿O¿ ÓQHPOL EL
NDÄDQ ELU H\ YDUG $V O NHQWOHUL ELÄLPO
ELÄLPOHQGLUHQ H\ LPDU KXNXNXQD X\JXQ UX
JLEL DUWDQ KHU DUDO ùD KHU NÙÄÙN DUVD\
\DSPD\D LPN¿Q YHUHQ R DSDUWPDQOD PD GÓQH
HQ ULVNOL DODQODU P] Q RQODU ROGXùXQX
ULVNOL DODQODU JHFHNRQGXGDQ DSDUWPDQO
pOHULQ /D] PÙWHDKKLWOHUL ELQDODU GL\R
LPGL EXUDGD VDGHFH /D]ODU \RNWX RUDGD Ä
DV O NHQWVHO DODQGDNL HQ EÙ\ÙN VRUXQXP
HQ EÙ\ÙN VRUXQXPX] R SROLWLNDODU Q ÙUHW
JHFHNRQGX DODQODU QGDQ GDKD ÄRN EX NHQ
PHUNH]LQ HWUDI QGDNL LON ÄHSHUGH ROX PX
DPD EX EL]LP OLWHUDWÙUÙPÙ]GH R NDGDU D]
V Q I Q PHNDQVDO LQ DV QDV O ROX\RU PHN
DSDUWPDQOD PD\D ELUD] EDN \RUXP /LWHUDW
\DQL EL]LP GHY ELU JHFHNRQGX OLWHUDWÙUÙ
DPD ÄRN JÙGÙN ELU NHQWLQ GLùHU \DS VWRN
ROX XPXQD LOL NLOHULQH RUDGDNL VL\DVL
ÄRN NÙÄÙN ELU OLWHUDWÙUÙPÙ] YDU <DQL JH
\DS \RUX] EX DODQGD KLÄELU H\ \RN +DOEXN
JHOL\RU

.HQW PHNDQ \HUHOOH PHUNH] DODQ QGDNL L
Ù]HULQGHQ NXUXOX\RU LPGL EXQXQ NÙOOL\H
ÙUHWLP VÙUHÄOHULPL]GH GL\HOLP NL RGDODU
GLùHU PHVOHN RGDODU GLùHU DNDGHPLN DOD
RILVOHULQGH \DQL EX DODQGD ÄDO DQ RILVO
JHUHNL\RU %L]LP EDNDFDù P] DODQODU EX LP
SROLWLND ÙUHWPHPL] JHUHNL\RU <DS O ÄHYU
JHUHNL\RU 2QXQ Ù]HULQGH QH RDFDù QGDQ
GHSUHP NRQX X\RUX] EHWRQOD PD ÄHYUH WL

DN QGD VDùO NV] GRQDQ PODU SUREOHPOHU
WDUW \RUX] DPD DQD WDUW PD\D KLÄELU]D
PHVHOHVL YH RQXQ Ù]HULQGHQ JLGL\RU <Ù]OH
EHNOHUNHQ NHQWVHO SROLWLND EHNOHUNHQ
2\VD NHQWVHO SROLWLND GHPHN NHQWOHULQ
\D DPDNWDQ PXWOX ROGXNODU R NHQWWHQ N
DODQ ROGXùX ED ND NHQWOHU LÄLQ GH ÓUQH
ELQDODU P]OD ÓYÙQPHN \HULQH LQVDQODU Q
N VDOWDELOGLùLPL] YH RQODU Q \ROGD VDUI
ÄDO UNHQ \ROGD VDUI HWWLNOHUL]DPDQ Q
.HQWVHO SROLWLND ÙUHWLUNHQ PHVHOD RQ
D]DOWDFDN QH ÙUHWL\RUXPpD EDNPDN JHUHNL
N U OJDQ EÙWÙQ GLùHU JUXSODU Q EX NHQWLQ
NXUDUNHQ EX NHQWL QH NDGDU NXOODQDELOG
NHQWLQ PHNDQ QD GDKLO HGHBELOL\RU PXVXQX
EX VRUX\X VRUPDO EL] EXQODU KHS NRQX X\
ELU ELÄLPGH EXQX NRQX PD\D ED ODG ù Q]]D
NHQWVHO SROLWLNDODU ÙUHWWLùL]DPDQ YH E
PXWODND GHùL HFHNWLU 0HVHOD NHQWVHO G
KDQL KHQÙ] \D DG ù P] ÄRN UDGLNDO ELU DF
PHVHOD NHQWVHO GÓQÙ ÙP SROLWLNDODU E
EX VDGHFH PHUNH]L LNWLGDU Q NHQWVHO GÓQ
NHQWVHO GÓQÙ ÙP SROLWLNDODU \RN 0HVHO
GÓQÙ ÙP SROLWLNDV YDU P " 9DUVD GD EX EÙ
QLWHOLNWHNL GÓQÙ ÙP ELÄLPOHULQL IDUNO
HVQHNOLNWH YH DGDOHWL VDùOD\DFDN ELU Q
EL]LP EXQX PHUNH]L LNWLGDUGDQ EXQX EHNO
LNWLGDU]DWHQ WHPHOLQL VHUPD\H ELULNLPL
WDPDP QGD QHUHGH\VH VHUPD\H ELULNLPLQLQ
ÄRN WHPHO ELU Ä N NUL]GHQ Ä N DUDF]DW
VRV\DO GHPRNUDWODU VRV\DOLVWOHU YH GLù
HOLW VHÄNLQOHUGHQ GL\HOP W UQDN LÄLQ
R DODQGD KHQÙ] EX \RN %XQXQ DFLOHQ JÙQ
SROLWLNDQ Q NUL]LQLQ ND\QDNODU Q ÓQFH Ä
EÙ\ÙN JHUÄHNWHQ EHONL WRSODQW ODU \DSD
EXQODU DPD \HWHUOL GHùLO *HUÄHNWHQ EL
EXQXQ JÙÄOÙ ELU ELÄLPGH WHNUDU NRQX XOP

%LU ED ND PHVHOH \LQH NHQWVHO SROLWLND
KHP NHQWVHO DODQGD LNWLGDUD DGD\ RODQ
PHFOLVOHU YHVDLUH SDUWLOHULQ \HUHO \ÓQ
YH NHQW VDNLQOHUL EL] QDV O GDYUDQ \RUX
VHÄLPOHUGH" <DQL VHÄLPOHU RODFDN ELULO
SROLWLNDODU KHP \DSDFDN KHP X\JXOD\DFD
ELÄLPGH VÙUGÙUHFHNOHU <DQL PHUNH]LQ YH
JDVSODU QD YHVDLUH NDU GD ELU JÙÄOÙ LU
EX DPD EL] VHÄLPOHUGH EDN Q LPGL EÙWÙQ
EXQXQ ÄRN JÙÄOÙ ELU ELÄLPGH YXUJXODQG ù
NHQWVHO SROLWLND ÙUHWHUHN EX VRUXQODU
'DKD ÄRN VÓ\OHPVHO \XNDU GD \DQL EXQX \DS
RNXO VD\ V Q DUWW UDFDù] EX QDV O SHNL
EÙWÙQ LOÄHOHULPL]GH NUH VD\ P] DUWW UI
DUWW UDFDù] NL" %HOOL \HUOHUGH EHONL LK
ÄRN VÓ\OHPVHO ELU H\ GDKD GRùUXVX ELU V
YHUL\RUX]" <DQL NHQWVHO SROLWLND DODQ Q
R\ODU EL] NLPL VHÄHUVHN NHQWVHO SROLWL
NDWPD\DFDNODU Q RQODU EHOLUOH\HFHNOHU
PL\L] DFDED R SROLWLND ÙUHWLP VÙUHFLQH"
NDWDFDù] EÙWÙQ PDKDOOH PHFOLVOHUL ROX
NHQWVHO SROLWLND ÙUHWLP VÙUHÄOHULQH N
NDW O P QD GDLU ELU DUDF Q] EL]H VXQGXùX
GH EHNOL\RUX] VL] EL]L QH]DPDQ NDWDFDNV
$VO QGD \HUHO VRUXQODU P] YH \D DG ù P] N
VRUXQODU GLNNDWH DODUDN R\ YHUPL\RUX]
D\U PODUD JÓUH RUDGD ROX PX \DS ODUD JÜ
ELU &+3pOL JLGLS GD ED ND ELU SDUWL\H ÄRN
%D NDQ qJLGLQ L WH R\ YHULQ 0LOOHW WWLD
GL\H GÙ ÙQÙ\RUXP 9HUPH\H\LP GL\RU EHQLP
YHUVHP R\ YHUPHVHQ QH RDLFDN GL\RU %DN
GL\RU NL q NWLGDU ND\EHWPHN Ù]HUH\L] JL
ND\EHGHFHùL] LNWLGDU r <DQL EDN Q EXQODU
\RN DVO QGD EL] QH\H JÓUH R\ YHUL\RUX]D GD
LNWLGDUD R\ YHULU JLEL \HUHOGH R\ YHUL\RU
ELU WDQHVL GH EXGXU 2\ YHULUNHQ HOEHWW
YHUHOLP GL\HLELOUL] WDELL \DQL GHPLQ GH
ÄRN \Ù]H\VHO D\DNODU ÄRùX]DPDQ \HUH EDV
RUWD\D NR\XOPDG ù D\DNODU Q \DQL R VW

ROPD\DQ VÓ\OHPVHO H\OHU ROGXùX LÄLQ GH E
NUL]L \DUDW \RU %L]LP X DQGD EXQX GÙ ÙQG
YH EX NHQWOHUL GD\DQ NO N O F KHU H\H \D
PHVHOD GD\DQ NO N ODFDN ELU NHQWVHO SRO
QDV O QHUHGHQ EXQX VÓ\OH\HELOL\RUODU YH
ÓQHPOL \ROX QH NDGDU VÙUHUVH VÙUVÙQ QH
ÙUHWLP VÙUHFLQLQ JHUÄHNOH PHVL \DQL GÙ
QH\H GRNXQGXùXQX ELOHQ GRNXQGXùX H\LQ G
N U OJDQO ù Q ELOHQ ELU SROLWLND ÙUHWLP V
NUL]L VDGHFH ELU \HWNL JDVS NUL]L GHùLOGL
\HUHO \ÓQHWLPOHUL ND]DQP PXKDOLI SDUWL
\HWNLOHU LGGHWOH JDVS HGLOL\RU %X Dù U
ELU KXNXN VLVWHPLPL] ROVD DPD EXQXQ ÓWH
JDVSODU ROPDVD GD EL]LP X\JXOD\DELOHFHùL
HVQHNOLNOHUL RODQ D\Q]DPDQGD GD WHPHO
JHUHNHQ SROLWLNDODU P] ÄRN HNVLN YH EL]L
2GDODU P]D EX NRQXGD ÄDO DQ DNDGHPLV\
EÙ\ÙN URO GÙ Ù\RU %Ó\OH ELWLUH\LP ÄRN WH

' /(. .5%8/87 ¤RN WH HNNÙUOHU +RFDP)LNUH
LÄLQ WHNUDU VÓ] YHUPHN LVWL\RUXP DPD K¿
GL\H GÙ ÙQÙ\RUXP %X \Ù]GHQ HùHU X\JXQVD
+RFDP] 0LPDU 6LQDQ *Ù]HO 6DQDWODU ¹QLYHU
K¿O¿ GHUVOHU YHUPHNWH NHQGLVL EL]H KHP
QHGHQOHULQL YH VRQXÄODU Q NHQWOHULQ
SURMHOHULQ UROÙ Ù]HULQGHQ DNWDUDFDN %X

3URI 'U)8$7 (5&$1 0HUKDED JÙQD\G Q %X R
EDùODQW WHNQRORMLN DOW\DS \ KD] UODPD
3ODQF ODU 2GDV WDP]DPDQ QGD ELU JÙQGH
EÓ\OH ELU]DPDQGD VDGHFH NUL] NRQXVXQX JÙ
KDUFD\DUDN NUL] NRQXVXQGD YH NHQW NRQXV
KDULWDP] ROX WXUDQ LQVDQODU ELU DUD\D

LPGL GÙQ\DGD YH 7ÙUNL\HpGH NUL]GHQ EDKV
JHUHNL\RU *LUL WH Ó]HOLNOH]PLU GHSUHPL
ÄHNPHN LÄLQ VÓ\OH\H\LP ELU GÓQHP -DSRQ\D
ÄDù UP ODUG EHQL RUD\D JLWWLùLPGH 9DQp
GHSUHPLQ QRNWD NDÄO N ELU GHSUHPLQ
-DSRQ\DpGDNL HNRQRPL SROLWLN YH GHSUHP
NHQGL HOL\OH NHQGLQH Ó]JÙOÙNOHUL\OH GH E

'LùHU WDUDIWDQ DVO QGD DÄ O NRQX PDV Q
GHWD\O GLOH JHWLUGL %HQ ELUD]F N GDKD
ELUD]F N EÓ\OH ELU EÙWÙQVHO LOL NLVHO EL
\HWL WLUHPL\RUXP DPD RODELOGLùL NDGDU \
VDEDK Q EX VDDWOHULQGH JÓUVHO PDO]HPH\
RODFDN <DSDELOGLùLP NDGDU \OD QH NDGDU
NRQXVXQGD PÙGDKDOH HGHELOLUVLQ LPGL
H\OHUGHQ ELULVL \DN Q ÄHNLP \DSDFDù] ND
VÓ\OH\HFHùL] 6RQUD ELUD]F N GDKD X]DN ÄHN
]PLU GHSUHPLQH EXQXQ DFDED QH\OH EDùOD
GH\LQFH VWDQEXOpGDQ ÓUQHN YHUHFHùL] YH
SROWLNDP] \RNr GHPL WL EHONL GH DOWHU
PXWODND ELU DOWHUQDWLLQLQ ROXUX Ù]HULO
)LNUHW +RFD VÓ\OHGL

9LGHR JÓVWHULPL q(YHW EHWRQ PDNLQHVL
EHWRQ PDNLQHVL EHQ LQ DDW PÙKHQGLVL\LP
SDW YXUGXNÄD 7ÙUNL\H NDON Q \RU NDON QD
JLGL\RU GL\RU LPGL ELUD] VRQUD R EHWRQ S

(YHW EHWRQ SRPSDV QD KD\UDQ NDODQ YH ¤
*ÙQÙQGH EXQX GLOH JHWLUPHN DQODPO 0HV
JÓVWHULPL 1H\L \L\HFHùL JHOL\RU" .XPX \L\HI
LON LNL ÓUQHNWHQ KDUHNHWOH EX \DN Q ÄH
NDW O \RUXP EXJÙQOHUGH NUL] NDYUDP Q \
Ù]HULQH JLGHFHùL] %HQ NUL] GHùLO GDKD ÄR
EXODQDPDG ù LÄLQ 7ÙUNL\HpGH GDKD ID]OD R
ÄÙQNÙ ELUD] VRQUD VÓ\OH\HFHùLP JLEL DQL S
ÄÓ]ÙP DQFDN SROLWLN DNWÓUOHULQ YDUO ù Q
\DYD \DYD KHU WDUDI P]GD EX ÄÙUÙPHQLQ L

H\H EDNW ù P]GD ELUD]F N GD EX NUL]OH LO
R]DPDQ 'HQL]OLpGH LOJLQÄ ELU WRSODQW R
GXD HWPL OHUGL %HONL GH EL] GH LPGLGHQ
EL]L NUL]GHQ NRUXr GH\LS EX L WHQ SDÄDP]
GÙQ\DV QD JLUHELOLUL] DPD pGHQ VRQUD
q$PDQ NUL]GHQ EDKVHWPH\LQ ÙONH\H VDYD
VHIHU GH NRUNXS NRQX PDP EXUDGD E UDNDE
NRUNDFDù] LNLOHPL LÄLQGH\L] 7DELL EL] EXC
JD]HWHOHUH GÙ HQ ELU KDEHU YDU q.RÄ +ROC

'HPHN NL NUL]L ELUD]F N GD JÙQFHO KDEHUOHU

7ÙUNL\Hp\H EDNW ù PGD EX NUL] PXKDEEHWLQC
IRWRùUDI Ä NW t)RWRùUDI JÓVWHULPL %X EH
QHUHGHQ ED ODPDO " 7ÙUNL\HpGHNL NUL] YH G
ELUD]F N EXQD EHQ]L\RU %DN Q ELULVL ÓWHN
ÓWHNL VRSDQ Q XFX\OD WXWX\RU 'Ù WÙ GÙ H
EX GXUXPX HQ L\L DQODWDQ H\OHUGHQ ELULV
7ÙUNL\H LÄLQ qHYULPOH HPH\HQ NDUPD Dr GHP
.DUPD DQ Q GD ELU DG YDU 'HPLQ \LQH)LNUH
H\GHQ EDKVHGL\RUVDN DG Q NR\PDP] JHUHN
DQODPDP] DÄ V QGDQ DQODP GÙQ\DP] ÙUHV
EHONL GH \HU \HU PXKDOLI ROX WD EÓ\OH WDP
H\H EDNW ù P]GD WDP GD EXJÙQOHUGH ED ND
+HSLPL] HYOHUGH V UÄD NÓ NOHULPL] RODQ NI
KDOH ELUD] VRQUD GHWD\ODQG UDFDù] %LUL
HQ EHODO GÓQHPOHULQGH VWDQEXOpGD ELU
GHYOHWLQ WHPVLOFLOHUL .DQDO VWDQEXO LK
PL GL\HFHùL] EXQD \D GD H\L PL VRUDFDù] Q
DOG ODU QLÄLQ EÓ\OH ELU VÙUHÄWHQ JHÄL\RU

NLQFL QRNWD %HONL GH DVO QGD KDQL KHUKI
NUL]LQ \RùXQOD W ù DOJ ODU P] Q GDù OG ù
NDYUDPODUOD LÄLQGH \D DG ù P] EX ÄÙUÙPH
NXUPDP] JHUHNL\RU 2 \Ù]GHQ KHUKDOGH EHO
KHOH ÄÓ]ÙPH \ÓQHOLN NRQX WXùXPX]GD NXOOD
JHUHNL\RU (Q D] QGDQ EHQ Ó\OH GÙ ÙQÙ\RUX
DFD\LS ELOPHFH DPD ELOPHFHQLQ Ù]HULQH J
HVNL <XQDQpGDQ LWLEDUHQ D\Q]DPDQGD NUL
ELU WRSOXPXQ KHUKDQJL ELU L OH\L LQ NHQGI
NDO QG ù QRNWDGD R VRQ DQGD ELU NULWLùL
NDU HOH WLULGLU YH HOH WLUL RNODU Q Q
\Ù]GHQ PHVHOD 8PEHUWR (FRpQXQ ÄRN JÙ]HO
VRUXQ RUWD\D Ä NW ù QGD NUL] RUWD\D Ä NW
HQWHOHNWÙHO QH \DSDU" ¤RN SUDWLN ELU H\
GRùDO EÓ\OH JHOPL EÓ\OH JLGHU KDQL DQQH
GÙQ\D\ \D GD DOHPL WDP WHUVLQH EX GÓQHP
WRKXPODU Q VÙUPHN YH L OH\L OHUL DÄ ùD Ä
NUL] NDYUDP Q EX DQODPGD NXOODQPD\ ÓQHU
7ÙUNL\HpGH Ó]HOLNOH DPD GÙQ\DGD GD IDNI

SUREOHPLPL] YDU ¤ÙQNÙ DVO QGD NUL] EHOC
.DUO 0DU[ELU GÓQHP \DSP NHQGL \DSW ù K
NUL] qDPDQ $OODKp P L WH NDSLWDOL]P GHY
JLGL\RUr GHGLùLQGH EÓ\OH ROPDG ù Q JÓUÙ\
ELU WRSOXPXQ NHQGLQL \HQLGHQ ÙUHWLPL G
SDWODPDG Ur 2 SDWODPD\D GD DQL FHYDSODU
NHQGL GHQJHVLQL VRUJXODU)DNDW WRSOXP
KHU WÙUOÙ Ó]QH ROPD SROLWLND KDUHNHW
EXOXQDPDG ù QGD DUW N \DYD \DYD VX NRND
JLEL HùHU RQX H\ \DSDPD]VDQ] \DYD \DYD N
]DPDQG U EHOLUOL ELU]DPDQGD ÄÓ]ÙOHPHGLù
\D\ ODQ ELU ÄÙUÙPH KDOLQH JHOGL $VO QGD
\HQLGHQ H\ \DSPDQ Q ÙUÙQÙGÙU WH WRSOX
\RN HWPH]VH \HQLGHQ YDU RODPD] 2 \Ù]GHQ
\DS ODUD L]LQ YHULOPHGLùL LÄLQ \D GD GD SR
LÄLQ ELU ÄÙUÙPHGHQ EDKVHGHFHùLPL]L VÓ\OÙ
GDKD ÄRN WDELL NL EX 'ÙQ\D HKLUFLOLN *ÙQ
LPGL HNUDQGD JÓUGÙùÙQÙ] H\ EL]LP KHSLPL
ELU NHQWLQGH ELU ÙONHQLQ ELU NHQWLQGH
GÙQ\D\ DPD Ó]HOOLNOH NHQWOHUL LÄLQH D
NHQWOHUH \D\ OG ù Q JÓVWHUL\RU 1H JÙ]HO
KDW UOD\DPDG P DPD 7RURQWRpGDQ +RFDP]
KDVWDO NODU Q GÙQ\D ÓOÄHùLQGH QDV O \D\
NDYUDP \D GD HKLU NDYUDP Q \HQLGHQ GÙ Ù
NHQW GHùLO HKLU NDYUDP GHPHPL] JHUHNL\
GHGLùLPL GH VÓ\OH\H\LP ¤ÙQNÙ NHQWOHU LQ
HWWLNOHUL NHQGL HOOHULQLQ ÙUÙQÙ RODQ
HKLUOHU HQGÙVWULOH PHQLQ XOXV GHYOHWL
GÓQÙ Ù\RU *LWWLNÄH NHQGL NHQGLQH EHQ]H\
JLEL WHN WLSOH HQ ELU DUDGD ROPODU \D
EX GÙQ\D ÓOÄHùLQGH NHQWOHULQ QHWZRUN K
GXUPDP] JHUHNL\RU %X]DWHQ PHNDQ NDYUDP
SODQODPD KRFDODU Q Q VÓ\OHGLùL JLEL QHWZ
EDKVHWPHPHPL] JHUHNL\RU 'RùUX DPD ELU
HKLUOHUH GÓQÙ PHVLQLQ DUNDV QGD \DWDQ
JLEL DG Q NR\PDP] JHUHNL\RU %X HQGÙVWU
JÙQ NHQGLVLQH EHQ]HWWLùL \D DP RUWDPODU
EHQ]H\HQ DPD ELU PHNDQL]PDQ Q ÙUÙQÙ RO
ELULNLPLQLQ XOXV GHYOHWLQ LÄLQGHQ JHÄWL

KDOLQGH EÙWÙQ GÙQ\DGD EDùODQW ODU Q Q
GRùDQ Q ELU ND]DV GHùLO EX QHWZRUN L OH
YLUÙVÙQ EÙWÙQ GÙQ\D\D EX WUDILN LÄLQGH Q

'LùHU ELU H\ ELUD]F N EXQX GHWD\ODQG UDPD
DPD GÙ ÙQÙUNHQ EL] Ó]HOOLNOH EXJÙQOHUGH
NDU OD \RUX])DNDW VUDUOD VRQXÄODUD \
PHNDQL]PD\D EDNPDP] JHUHNL\RU L OH\L H ED
GHGLùLPGH GH EHONL GH WDUW ODFDN ELU N
GÙ ÙQÙ\RUXP .DSLWDOL]P H LWWLU VHUPD\H E
IDUNO]DPDQODUGD HNOHPOHQPHVL\OH ROX X\
GHYULPL VHUPD\H ELULNLPL YH DWDHUNLO \D
GHYOHWOH VHUPD\H ELULNLPL NHQGL LÄLQGH L
GD GHùL WLUL\RU 2 \Ù]GHQ KHUKDOGH DOWHU
PHNDQL]PDODUD NDU GHùLO EX PHNDQL]PDO
NDU ELU GLO JHOL WLUPHPL] JHUHNL\RU %X
GH NHQWOHUHL GH HKLUOHUH GÓQÙ WÙUÙ\RU \
LQVDQ GRùDV QGDQ EDKVHWPL\RUXP GHùL NHQ
NDYUDP Q VDGHFH LQGLUJHPHFL PHNDQLN EL
DWDHUNLO \DS ODQPD GHùLO VDGHFH WHNQLN
EXQODU Q IDUNO]DPDQODUGD IDUNO GÙ]H\O
JÓUÙ\RU YH GÙ ÙQÙ\RUXP .DSLWDOL]P NHQGL

3HNL PHNDQL]PD QHGLU GHGLùLPL]GH PHNDQL
QHGHQOHUL DPD LPGL ÄÙUÙPH RDUDN WDQ
VÓ\OHGL 7DP GD DVO QGD EHONL GH HGHEL\D
q.HQW \DODQ NÓ\ GH \DODQG LPGL LNL \DOD
'ÙQ\DGD NDÄDFDN \HU NDOPDP W r $FDED NHQ
GÙQ\DGD NDÄDFDN \HU E UDNPD\DQ H\OHU QHO
EDNPDP] JHUHNL\RU 2 VÙUHFH EDNW ù P]GD E
EDNW ù P]GD ELULVL VHUPD\H ELULNLP PHNDQ
PHNDQL]PDV XOXV GHYOHW ELUELUOHUL\OH LO
GHùL NHQ NUL]L GH EXUDGD DUDPDP] JHUHNL
NUL]OHUL DVO QGD NHQGL LÄLQGH GLQDPLN V
\HQL GHùHUOHQHPHPH NUL]L GL\RUX] %X D U
WLFDUHWOH XùUD DQODU YH SDUD\OD ILQDQVO
DODQODUD \HQL H\H \ÓQHOL\RU %X NHQW D
SDWODPD\D \RO DÄ \RU +HP LQ D HWWLùL HKU
G DU \D GRùUX \HQL PHNDQODU :XKDQpGDQ Ä

%LU GLùHU NUL] HùHU NDSLWDOL]P)LNUHW +R
EX PHWDODU Q GD GROD PD JLUPHVL JHUHNL
\HQLGHQ ÙUHWHPHGLùLQGH D U ÙUHWLP NU
.DQDO VWDQEXOpD EDNW ù P]GD VWDQEX
³UQHùL]DPDQ P] ROXUVD WDELL NL VHUPD\H
NHQGL LÄLQH LÄNLQ NUL]OHU ELU GH WDELL L
NUL] %LU GÓUGÙQFÙVÙ 7ÙUNL\HpGH JLWWLNÄH
\RO DÄDQ VHUPD\HOHU DUDV ÄDW PD $ U E
IDUNO VHUPD\HOHU DUDV QGD KHP LWWLIDNOD
PHVHOD GDKD \HQL ELU \D] ELWLUGLP q+D\G
+D\GDUSD Dp\ QH \DSDO P VRUXQX ELU HNOL\
VRUXVXQD \ÓQHOL\RU)DNDW EHONL GH NHQW
ELU GLQDPLN YDUVD R GD XOXV GHYOHWOHU
JLEL JHÄ NDSLWDOLVWOH HQ ÙONHOHUGH KHP
PDOL NUL] GHGLùLPL] ILQDQVDO N V WO O N
ILQDQVDO NUL] EHUDEHULQGH GHYOHWLQ GH
\HQLGHQ ÙUHWPHVL LÄLQ ND\QDN LKWL\DF Q
GHYOHWLQ LÄ PLPDUL \DS V Q K]OD GÓQÙ WÙ
DQODPDGDQ EDNPDGDQ RUD\D \ÓQHOPHGHQ V
GHYOHWL ROX WXUDQ NXUXPODUD ND\QDù Q]
RODFDNV Q] HWNLOL RODFDNV Q] HWNLQOL
\HQLGHQ ÙUHWHPHGLùLQGH VLVWHPL \HQLGHQ
ELU QRNWDGD PH UXOXN NUL]L GHGLùLPL] ELU
PLOOL KDV ODQ Q DUWW ù DUW GHùHULQ DU\
VDGHFH VHUPD\HQLQ JHWLULVLQL DUWW UP \RU
GH DUWW U \RU)LQDQVDO NUL] GHYUH\H JLUG
GH PH UXOXN NUL]L 0H UXOXN NUL]L KHP VÓ\O
HQ ÄRN GD JÙQGHPH JHOHQ ELULNLP YH EÓOÙ
L OHYOHUL \HULQH JHWLUHPH\LQFH EX VHIHU
VDGHFH VHUPD\H GÓQJÙVÙQÙ GHùLO ELU GH J
SURMHOHU GHGLùLPL] R ELQOHUFH NDP\RQOD E
GÓQJÙVÙQÙ K]ODQG UPDN GHùLO ELU GH PH U
ELU JHOLU \DUDWPD PHNDQL]PDV Q Q GD ELU S
DNWDUPD GHùLO D\Q]DPDQGD ELU JHOLU GÓ

%LU GLùHU H\ WDELL NL HQ ÓQHPOL NRQXODU
ÓOÄHùLQGH GHPLQ DQODWW ù P] QHWZRUN H
LOL NLOHUL JHUÄHNOH LUNHQ KHU XOXV GHYO
ROXS RODPDPD XOXV GHYOHWOHULQ JÙÄOÙ \D

GHGLùLPL] GHYOHWOHULQ XOXVODUDUDV OD P
VWDQEXOpX DÄ NOD\DQ &XPKXUED NDQ H\ VÓ
LÄHULGH ND\QDN EXOXUX]r 'HPHN NL GÙQ\D\OD

LPGL VÓ\OHGLùLPL] EX LNL WDQH PHNDQL]PDQ
%LUWDN P ÓWHOHPH PHNDQL]PDODU NXUX\RU
GHPLQ +RFDP] Q VÓ\OHGLùL JLEL KHU H\GHQ
\DUDW ODP \RUVD GRùD KHP VHUPD\H ELULNLP
GRùD GHYUH\H JLUL\RU <HQL PHWDOL PD DODQ
SROLWLN PÙFDGHOHQLQ GH K]ODQG ù NDPX K
ED O \RU %LU GLùHUL WDELL NL EX GRùDQ Q VÙ
NDU P]D Ä N \RU KHP GH N UGD NDU P]D Ä N
0DGHQ <DVDV 6X <DVDV VX \ÓQHWPHOLùL DI
VLVWHPLQ LÄLQH ÄHNLOPHVL 7DELL EXQODU Q
ÓQHPOL \DS VDO GÓQÙ ÙPOHU JHÄLUL\RU %L] E
LVWHPHP GHGLùL \ÓQHWL LP ÄRN ÓQHPOL ELU
DUDGD KDUHNHWOLOLùLQL VDùOD\DQ H\ NLQP
YHUHQ ELULVL RODUDN EX VÙUGÙUÙOHELOLU NH
6ÙUGÙUÙOHELOLUOLN DVO QGD pOÙ \ OODUG
H\LQ GHVWHNOHQPHVL H\GH WXWXOPDV GHP
XOXV GHYOHWOH VHUPD\HQLQ]DWHQ WDULKOH
GD NDPX Ó]HO L ELUOLùL \D GD VHUPD\H YH G
EHUDEHULQGH GHYOHWOH VHUPD\H DUDV QGDN
W UQDùD GÓQÙ WÙUPH\H ED ODG YH EX GD NDU
PHJD SURMHOHU ELUD] VRQUD EDKVHGHFHùL] D
SURMH NHQWVHO \HQLOHQPH \D GD NHQWVHO J
KHP NHQWLQ HWNLOH LP LÄLQGH ROGXùX HQHU
IDEULNDODU ÄDO DFDN WÙNHWLP JHUÄHNOH H
GH NHQGL LÄLQGH GÓQÙ Ù\RU 7DP GD /HIHEYUH
KHP G D GRùUX L WH EXUDGD NDU P]D Ä NDQ
PDKYHGLOPHVLQH \RO DÄDQ HQ ÓQHPOL YXUJX
LNL WDQH PHNDQL]PD WRSOXPXQ WRSODP \HQL
PHNDQL]PD NUL]H JLUGLùLQGH LVWHU LVWHPH
JHOL\RU %L] EXQD GD RWRULWHUOH PH GL\RU
JÙÄOHQGLULOOPHVL EL]GH NDQXQ KÙNPÙQGH ND
DPD \DYD \DYD RWRULWHUOH PH EDVN F WRV
ID LVW \DS ODUD GÓQÙ Ù\RU 7HN NL LQLQ \ÓQH
RWRULWHUOH L\RU DPD GHPLQ +DWLFHpQLQ D
JHOL PH SURMHOHUL \HUHO \ÓQHWLFLOHULQ R

NHQGL JÙQGHPLQGH PHUNH]L RWRULWHUOH P
JLEL \HUHO LNWLGDUODU EDVN ODPD \ÓQÙQG
DÄ ùD Ä NDUG ù NUL]L ÄÓ]PH GHùLO GH ÓWHO
VÓ\OH\HELOLUL] %XUDGD GD 7ÙUNL\HpGH EHO
7ÙUNL\Hp\L DQDOL] HGHUNHQ ÄRN KDNO ELU \
H\H GDKD \RO DÄ \RU 2 GD ND\ UPDF O N LOL
GRùUX ND\ UPDF LOL NLOHU EX RWRULWHUOH
NUL]L ÄÙUÙPH\H \RO DÄDQ H\ PHNDQL]PD <D
LKDOHOHUL DODQ \DS ODUOD VL\DVL LNWLGDU
EX ND\ UPDF O ù DÄ ùD Ä NDUDQ PHNDQL]PDOD

H\H EDNW ù P]GD DVO QGD EHONL ELU NUL] KD
LOJLQÄ ELU H\ ROX\RU 1H ROX\RU" WH
ELULQGH]DPDQ LÄLQGHNL EX NUL]OHUH VL\DV
WDP GD NUL] WDQ P QD X\JXQ DQL SDWODN YH
DQL SDWODN YHUL\RU DPD VL\DVL PÙGDKDOHO
GHYDP HGL\RU DPD pODUGDQ VRQUD VL\DV
WDQ PODG ù NRGODG ù ELU \HUGH ROGXùX LÄ
%XUDGD]DPDQ P \RN EDQD NDO UVD EXJÙQNÙ
NDSLWDOL]PLQ VHUPD\H ELULNLPLQLQ XOXV
\DS VDO VRUXQODU YDU 2 \Ù]GHQ GH ELU H\
NHQWOHUL YH 7ÙUNL\Hp\L DQODPDN DÄ V QGDQ
H\OHUL SHUGHOHPHN DQODP QD JHOL\RU DPD
DUDV QGDNL EDùODQW \ \DQL 7ÙUNL\HpQLQ NI
DUDV QGDNL WDULKVHO]RUXQOXOXNODU Q PH
GHWD\ODQG UDPD\DFDù P DPD GÙQ\DGD YH 7Ù
DUNDGD ODU Q ELU GÓQHP VÓ\OHGLùL JLEL GH
GH EL]LP ELU GÓQHP VÓ\OHQGLùL JLEL ELU D
\ÓQHWHFHNVLQ 7ÙUNL\HpGH GHYOHWH EDNW ù
YDU =DPDQ LÄLQGH JLWWLNÄH IDUNO OD \RU
\DVODU ÙVWÙQ NDPX \DUDU VD\ O ÄRN G
JHUHNHQ <DVD EX NHQWLQ GÓQÙ ÙPÙQÙ GH H\
Ó]HOOH WLUPH NDPX SHUVRQHO UHMLPLQL GH
NDPX PÙONL\HWL YH RUWDN NXOODQ P DODQOD
GHGLùLPL] WDELL EX GDKD VRQUD GD ED NDQ
\DS GDQ EDKVHGL\RUX]

3HNL HùHU H\ \DSDFDNVDN GHPLQ VÓ\OHGLùLP
.HQWVHO JHOL PH SURMHOHUL NHQWOHU Ä ND
.HQWVHO JHOL PH SURMHOHUL PHJD SURMHOH

\DS L OHW GHYOHW \D GD \DS L OHW NLUDOD
ROX X\RU %X ELU GÓQHP NHQWVHO ÙUHWLP PD
JÙQGHPH JHOL\RU 7DELL EXQODU Q RODELOPH
JHOL PL GHQLOHQ JHÄ NDSLWDOL]PLQ QHGHQ
YH EHUDEHULQGH \ÙUÙWPH JÙÄOHQLQFH LVWH
UDQWD GD\DO ELU VLVWHP GHùLOGLU .D\ UPD
Ä NDUW OPDV G U 2 \Ù]GHQ HKLUOH PH SODQ
ND\ UPDF O N H LWWLU UDQWD GD\DO VLVWHP
VL\DVL LNWLGDUOD ND\ UPDF DUDV QGD ELU
GÙ ÙQGÙùÙPÙ]GH EX UDQW \DUDW ODELOPHVL
VWDQEXO +DYDODQ QGD ROGXùX JLEL ÄDO D
JHUHNL\RU NL PHNDQ GHùHUOHQVLQ RUDGDQ
ÙUHWLP VÙUHFLQGH \DUDW ODQ WRSUDùD DLW
H\L JLEL \DQL HQ JÓUÙQÙU H\GHQ HWUDID GP
72. YDU \HUHO \ÓQHWLPOHU YDU %X WDUDID
HPODNÄLOHU YDU LQ DDWÄ ODU YDU YH GDKD
PHNDQL]PDQ Q H\L YDU %XUDGD VLJRUWD VHU
HWPH Ù]HULQH NXUXODQ JD\ULPHQXO \DW U P
NDSLWDOL]P VÙUHNOL NHQGLVLQL \HQLOH\HUH
%HQ EXQX VHUPD\H ELULNLPL\OH XOXV GHYOHW
LWWLIDN Q \HQLGHQ ÙUHWLPLQL VDùOD\DQ ELO

H\H EDNW ù P]GD ELUD]F N ÓUQHN YHUHOLP
\DSP W q'ÙQ\DGD HQ ID]OD GHYOHWWHQ LKD
7ÙUNL\HpGHQr .LPOHU" %XQODU DUW N KHU JÙ
\HUÙVWÙQÙ H\ \DSDQ /LPDN P GHUVLQL] &HQ
GHUVLQL] \DQL PXD]]DP \DS ODQPDODU \OD JÙ
LOJLQÄ WDUDI 2[IRUG HNRQRPLVLQLQ KHU \ O
\DSW ù JHOHFHùH GRùUX SURMHNVL\RQGD p\
RODUDN DOW\DS \DW U PODU JÓUÙQÙ\RU %X
VÓ\OHQL\RU YH SURMH WLSOHUL GH ÄRN \DN Q
RODUDN WDQ PODQ \RU YH R]DPDQ X DQODPD
LUNHWOHULQ PXD]]DP ELU JHOHFHùH \ÓQHOLN

3HNL ÙÄÙQFÙ ELU ÓUQHùH JHÄHOLP %X ÓUQH
VWDQEXO .ÓSUÙ ROVXQ 6Ó\OHGLNOHULPL]
%XUKDQ 6ÓQPH]pLQ VWDQEXO VWDQEXO ÄDO
H\LQ SDUÄDV GHùLO SDUÄDODU Q WRSODQG ù
EL]H DVO QGD EXJÙQNÙ VWDQEXOpX ÄÙUÙWH
SDUÄDV RODUDN JÙQGHPH JHOL\RU 0HVHOD E

DOW\DS HQHUML YH VDYXQPD DODQODU QGD P
PHJD SURMHOHU KD\DWD JHÄLULOPH\H ED ODQ
JHULGH E UDNDQ PHJD SURMHVL 7ÙUNL\HpQL
RODQ .DQDO VWDQEXO KL]PHWH DÄ OG ù QGD
\DSDFDN RODQ Ä OJ Q SURMHGHQ PLO\DU GR
UHNODP JÓUGÙN 0HJD SURMHOHU JHQHOOLNC
EX PHJD SURMHOHUL NÙÄÙN SURMHOHULQ ELU
SURMHOHUL GHYOHWOH VHUPD\HQLQ IDUNO OD
0HVHOD 6WUDWHML YH %ÙWÄH %D NDQO ù Q Q
DGHW L OHWPHGH DGHGL ILQDQVDO NDS
\DW U P WXWDU PLO\DU $%' GRODU RODQ
SURMHVL JHUÄHNOH L\RU YH \DNOD N EXQODU
EDNDO P SHNL EX KHUNHV ND]DQDFDN H\LQH
Ó]HO L ELUOLùL LKDOHVL DODQ LUNHWWHQ
VHYL\HVLQGH LKDOHOHUOH EX LUNHWOHUH DN
KDUHNHW HWWLùLPL]GH 7ÙUNL\HpGH VHUPD\H E
NUL]OHUL WDP GD VLVWHPLQ PDQW ù QGDQ GRC
\DUDWDPDPD KDOLQGH \HQL ND\QDNODUD \ÓQH
KHP XOXV GHYOHWLQ KHP GH VHUPD\HQLQ NH
VLVWHP ÙÄ WDQH GH ND\QDNWDQ EHVOHQL\RU
HPHQ ELU YDPSLUr GHVH ELOH DUW N VHUPD\
ELULNHQ VHUPD\H\L GHùHUOHQGLUPHN LÄLQ GP
DODQ QD GÓQÙ WÙUÙ\RU (PHN JÙFÙ GRùD \D
JÙFÙQH \HQLGHQ ÙUHWLP VDùOD\DQ NDG Q HPH

3HNL ÄRN X]DWW P ÓUQHùLPL]H EDNDO P +H
7ÙUNL\HpGH DVO QGD GHPLQ)LNUHW +RFDP] J
%X ÄÙUÙÙPHQLQ VDKLSOHUL YDU Ó]QHOHUL YDU
JÓVWHUPHGHQ HKLUFLOLN SODQODPDF O N L
.DQDO VWDQEXO VÙUHFLQGH 7002% ELU H\ KD
ELOLPFL KRFDODU P]D DUNDGD ODU P]D KD\
ELOLPOHU DÄ V QGDQ QH NDGDU SUREOHPOL R
ELOLPOHU DODQ QHGHQVH ELUD]F N GDKD]RU
GÙ ÙQFHOHUGHQ X]DNOD PDN ELUD]F N GDKD]
EDNW ù P]GD NHQWVHO PHJD SURMHOHUL HùH
SURMHGH NLPOHU YDUG GL\H EDNDO P YH VL\D
NDPX\X JÓVWHUVLQ .X]H\ 0DUPDUD 2WR\ROX
EX PHJD SURMHOHUH EDNW ù P]GD HYHW ND
XOXVODUDUDV EDùODQW ODU YDU 3 GHQLOL\

\DS L OHW GHYUHW \DS NLUDOD GHYOHW PHVH
VWDQEXOpGD \DS L OHW GHYUHWWL VRQUD \D
IDUNO PHNDQL]PD 3HNL NLPOHU YDUP " 0HVH
XOXVDO VHUPD\H YDU ELU GH $VWDOGL GL\H X
DUDV QGD ED]HQ QHOHU ROX\RU" %Ù\ÙN SURMH
JHWLUL\RU 3HNL NLPLQOH ELUOLNWH" 8OD W U
6X L OHUL R]DPDQ WDELL NL ¤HYUHFLOLN YH H
EDNDO P &HQJL] .DO\RQ 0DSD /LPDN ELU DUD
GDKD VRQUD ILQDQV G DU GDQ ÄRN VDùODQDP
GHYUH\H VRNXOX\RU)LQDQVEDQN *DUDQWL %
Ó]HO YH NDPX EDQNDODU GHYUH\H VRNXOX\RU
DNWÓUOHUL GH JÓUPÙ ROX\RUX] %XJÙQ VWDG
QDV O VDW Q DO U GHPL WL ED] VRV\DO ELOL
VWDQEXOpX VDWPD SURMHVL ELU WDUDIWDQ P
.DQDO VWDQEXOpGD GD \HQL EX LUNHWOHU I
L DUHWOHQHQ EÙWÙQ L OHUL \DSDQ \HQL ELU L
5ÓQHVDQV $QRQLP LUNHWLQ DG JHÄL\RU YH
DUDGD %X DUW N VDGHFH XQX GD VÓ\OHPHN L
NHQWVHO YH GRùDO RUWDP PDKYHGHQ RUWDP
+LÄ NXOODQPDG ù P KLÄELU]DPDQ GD NXOOD
WHKOLNHOL ELU NDYUDP EX pOL \ OODUGDQ
\HQLGHQ ÙUHWPHN LÄLQ GHùLO NHQGLVLQL \H
'HYOHWOH SL\DVD DUDV QGD ELU D\U PD GHùL
Ó]HOOH WLUPHGLU Ó]HO KD\ U EX \HQL ELU GÖ
VHUPD\HOHU Ù]HULQGH GDKD GD JÙÄ ND]DQDUD
WDELL LNWLGDU Ù]HULQGHQ VDùO \RU %XQD G
JHUHNL\RU 2 DQODPGD GHYOHW YH VHUPD\HQ
\DS GDQ EDKVHWPHPL] JHUHNL\RU 3HNL QH \D
QH \DSPDO VRUXVXQX GLOH JHWLUPHOL 7DEL
H\ GÙQ\D HKLUFLOLN EX NHQW KDNN IDNDW
\DS O \RU /HIHEYUHpLQ NHQW KDNN VDQNL EL
ELU GLOH GÓQÙ WÙUÙOGÙ %LUD]F N HYFLOOH
/HIHEYUHpLQ NHQW KDNN NDYUDP NHQWOHUL
ELULNLPL YH XOXV GHYOHWH NDU \HQL DOWHU
ELU Ä ùO N RODUDN GD WDQ PODU %XQX VÓ\O
ELULNLPL XOXV GHYOHW LPDODWD GD\DO VL
WRSOXPVDO WDKDNNÙP VLVWHPLGLU $UW N H
KLQWHUODQGD GÓQÙ PÙ VH QHWZRUND GÓQÙ
ÄDSUD] GD\DQ PD EDùODU ROPDN]RUXQGD %

JLEL &RYLG EL]H H\L JÓVWHUGL KDQL qVDN
JÙQÙQ ELULQGH QDV O EÓ\OH ELU V UÄD NÓ N
VDQPD\ Qr GL\RU *HUÄHNWHQ GH 7ÙUNL\Hp\H E
RUWDP LÄLQ PÙFDGHOHVL GLùHUL GH +DYD /
\D DG ù P] KHU DODQGD R NDGDU GD XPXWVX]
YDU HWWLUPH\H ÄDO DQ Ó]QH ROPD\D ÄDO D
\HQL Ó]QHOHU DÄ ùD Ä NDU \RU %X DQODPGD E
\LQH EX GÓQHPGH ÄRN ID]OD JÙQGHPGH \DQL
GHùLO \HUDOW YH ND\QDNODU G Ur GHU $\Q
'ROD\ V \OD PXWODN VL\DVHWWLU YH VL\DVDO V
YH NHQWL EX KDOGH K]OD GÓQÙ WÙUÙ\RUVD
ÓùUHQGLùLPL] YH EX ÄRN ÓQHPOL WRSODQW V
ELULNLPL XOXV GHYOHWLQ KHU KDUHNHW DODQ
VL\DVDO DODQ \HQL VL\DVDO DODQODU \DUD
XQXWPDGDQ DPD H]EHUOHUL NDSLWDOL]PLQ G
RODQ YH HQ ÓQHPOLVL GH KHUKDQJL ELU KL\
GL\RUODU \DUDW F \ N P ILODQ GHùLO \ N P
DùODU NXUPDN JHUHNL\RU *HUHNOL VRUXQ C
NDU JÓVWHULOHQ R ROXPOX XPXW YHULFL H
LQ D HGLOPHOL %X)LNUHW +RFDQ Q VÓ\OHGL
H\ GHùLO (YHW VHUPD\HQLQ NHQGL XOXV GH
VL\DVDO DODQOD VL\DVDO RODQ \HQLGHQ GÙ
SROLWLN PÙFDGHOH DODQODU DÄPDN JHUHNL
NUL]OHU GHùLO EX LQVDQ HOL\OH WRSOXPVD
ÄÙUÙPH\OH NDU NDU \D\ ] ¤RN ÄRN WH HNNU
HGHULP

' /(. .5%8/87 ¤RN WH HNNÙU HGHUL])XDW +
KHP)LNUHW +RFD KHP GH)XDW +RFD D\Q H
ELU VRQXFX ROGXùXQX DVO QGD NUL]LQ NDS
ROGXùXQX IDNDW EXJÙQ LÄLQGH EXOXQGXùXP
GHùHUOHQGLULOHELOHFHùLQH GHùLQGLOHU LN

' /(. .5%8/87 +RFDP EDùODQW P] NRSWX VL
LÄLQ NDOG ù Q] \HUGHQ EDùODQW Q Q NRSW
NDSLWDOL]PLQ VDOG U V NDU V QGDNL PÙFD
ÓOGÙùÙQÙ \HQL RODQ Q GD XIXNWD JÓUÙQPH
ROGXùXQGDQ EDKVHWPL WLQL] %XUDGDQ GHY

) .5(7 %$.$<$ LPGL DVO QGD LNL H\ VÓ\OH\H
HJHPHQ V Q ßDU Q NÙUHVHO ROLJDU LQLQ GU
\HWHQHùL \RN ¤ÙQNÙ VLVWHP KHU VHIHULQG
'ROD\ V \OD VLVWHPLQ VRUXQX ÄÓ]PH \HWHQHù
U]D ÙUHWPH DQV \RNWXU 2]DPDQ QH NDO \
GD\DWPDN EX L QÙNOHHU \ N PD NDGDU JLGH
LWLEDUL\OH DVOD PÙFDGHOH \RN GL\H ELU H\
JLEL RUWD\D Ä NDQ KDUHNHWOHUL SURWHVWR
EHUL GROD\ V \OD \DQL LQVDQODU D\DNWD ¹ÄÙ
ÄH LWOHQPL GXUXPGD IDNDW ELU VRUXQ YDU
SDUDGLJPD\D ÙWRS\D\D HQGHNVOL GHùLO <DÇ
HNLOGH \DQL ÄH LWOLOLN LÄLQGH EÙWÙQOÙùU
YH VÓPÙUÙOHQ V Q ßDU Q OHKLQH GÓQPH LPND
EX QH GHPHN" <DQL VDYXQPD D DPDV Q Q SHN
\DS OPDV JHUHNHQ EX GDù Q NO ù GHPLU ELU
ELU DUDFD GÓQÙ WÙUPHN JHUHNL\RU %XQXQ L
ROX WXUXOPDV JHUHNL\RU <DQL ELU HNR VE
SDUDGLJPD\OD EX \ N P WDEORVXQGDQ EX LQV
GDLPD YDU %LOL\RUVXQX] XPXW PÙFDGHOHGH
ELU WRSOXP PÙPNÙQ GHùLO LGHDOL ROPD\DQ
EX NDSLWDOL]PLQ NDSVDPO VDOG U V QD \RN
ÓUJÙWOHQPHVL JHUHNL\RU %LU GH XQX VRQ R
VRUXQODU Q HWUDI QGD GRDQPD\D \DUDU 5D
'ROD\ V \OD UDGLNDO HOH WLUL\L KHU D DPDGD
PDUX]DW P EXQGDQ LEDUHW HùHU VRUX YDUVD
WDELL EX NHVLQWLGHQ GROD\ GD Ù]JÙQÙP W
VDQDO RUWDPGD ELU H\H NDW OG ù P LÄLQ GH
6RUXODU YDUVD PHPQXQL\HWOH FHYDSODU P

' /(. .5%8/87 ¤RN WH HNNÙU HGHUL] EL]L N UP
]DQQHGL\RUXP VRUXODU \RN KHP GH VÙUHPL]L
Ó]HOOLNOH EHQLP LÄLQ ÄRN GHùHUOL ROGX ¤
)XDW +RFD D\Q]DPDQGD VL] VLVWHPLQ VRUXQ
VÓ\OHGLQL] NL +DWLFH +RFD GD EXQX NHQWVH
LÄHULVLQGH EXQXQ ROPDG ù QGDQ EDKVHWWL
SDUDGLJPD JHÄL D DPDV ÓQHULQL]OH DÄ O
GH L\L ELU DÄ O RWXUXPX ROGX (ùHU HNOHPE

) .5(7 %$.$<$HSLQL]H RUDGGDNL KHUNHVH WH HN
VXQX\RUXP

RWXUXP

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gWHNLOHûWLUPHQLQ 6RV\R 0HNDQVDO .UL]L
0HNDQVDO 3UDWLNOHULQ &RYÖG 6DOJÖQÖ

+DNN 2]DQ .DUD

<DûOÖOÖN YH .DPXVDO 0HNkQ ùOLûNLVLQLQ 3
.DUDN|\ 3HUûHPEH 3D]DUÖ 6DKLOLQGHNL

&DQ %XOXED

&29,' 3DQGHPLVLQLQ <DUDWWÖøÖ 6RV\D
.HQWOLOHULQ 3ODQODPDGD .DUDU 9HUPH
.DUûÖ\DND·GD)DUNOÖ 6RV\R (NRQRPLN

'U ³ùU ¹\HVL *Ó]GH (N LRùOX ¤HWLQWDKU

2WXUXPXQXQ GDELOLUVLQ

&29,' %DùODP QGD ³WHNLOH W

6RV\R 0HNDQVDO .UL]L"

+DNN 2]DQ .DUD\LùLW

6\UDFXVH ¹QLYHUVLWHVL 0D[ZHOO 6FKRRO RI &LWL

³]HW

%X ÄDO PD $QNDUDpQ Q 0DPDN LOÄHVLQH E
\D D\DQ ,UDNO 5RPDQ YH \HUHO KDON Q ELU
&29,' EDùODP QGD LQFHOH\HFHNWLU %X GI
DG QD VRV\DO PHVDIH PDVNH WDNPD YH KLM\
JÙQGHOLN KD\DW SUDWLNOHULQLQ 'HPLUOLEDI
VÓ\OHPOHUL DUWW U S DUWW UPDG ù DUD W
ù QGD ÓWHNLOH WLUPHQLQ VÓ\OHPVHO ER\X
NH IHWPHN DPDF \OD PDKDOOHGH \HU DODQ \D
5RPDQ PDKDOOH VDNLQL LOH \DU \DS ODQG
(OGH HGLOHQ EXOJXODU JÓVWHUPHNWHGLU NI
ÓWHNLOH WLUPH\L N] W UP W U %Ó\OHOLNO
VL\DVHW NDYUDP LOH RUWD\D DWW ù VDOJ Q
HGLOHELOHFHùL EHNOHQWLVLQLQ QDLßLùLQL
JÓVWHUPHNWHGLU <DS ODQ WDUW PD QLKDL
L OHYVHOOH WLULOHELOLUOLùLQH GHùLQHFHN

$QDKWDU NHOLPHOHU EL\R VL\DVHW PHNDQ R

6RFLR VSDWLDO &ULVLV RI 2WKH

$EVWUDFW

7KLV VWXG\ LQYHVWLJDWHV WKH SURGXFWLRQ
&29,' RXWEUHDN EHWZHHQ WKH WKUHH FRPP
'HPLUOLEDKÄH QHLJKERUKRRG RI 0DPDN GLVW
HPSKDVLV LV JLYHQ WR WKH HYHU\GD\ OLIH SU
VXFK DV VRFLDO GLVWDQFLQJ IDFH PDVNV DQG
PLJKW SRWHQWLDOO\ EH XVHG DV WRROV IRU P
VWXG\ IDFLOLWDWHV WKH VHPL VWUXFWXUHG L
5RPD UHVLGHQWV LQ RUGHU WR H[SORUH KRZ W
VRFLR VSDWLDO SUDFWLFHV LQ WKH QHLJKERU
H[DFHUEDWHG WKH H[FOXVLRQDU\ SUDFWLFHV E
WKLV ILHOG VWXG\ GHPRQVWUDWHV WKDW LW Z
FDOO IRU ELR SROLWLFV IURP EHORZ EXW SRV
WKH SDQGHPLF LQ D VRFLDOO\ FRKHVLYH ZD\ (
WR RSHUDWLRQDOL]DELOLW\ RI WKH oFULVLVp

.H\ZRUGV ELR SROLWLFV SODFH PDNLQJ VRFL

*LUL

&29,' YLUÙVÙQÙQ NÙUHVHO ÄDSWD \DUDWW
Ó]HOOLNOH GH GH]DYDQWDMO JUXSODU GRù
VRV\DO PHVDIH YH NL LVHO KLM\HQ Ù]HULQG
X\JXODQDELOLUOLùL KHU VRV\R HNRQRPLN V C
\D DQDQ NUL] RUWDP QGD 5RPDQ YH JÓÄPHC
JÓ]OHPOHQPL WLU NL JUXEXQ GD EHQ]HU HN
\DS V QGDQ KDOLKD] UGD VR\XWODQP ROPDV
G ODQP O ù GDKD GD DUWW UP W U 1LWHN
JÙQGHOLN L OHUGH ÄDO DUDN NDU ODUODUN
WDPDPHQ VDYXQPDV] ÙGEXUFXLPD.GÙ DPGÙDÙ HUGLU6H
1LWHNLP EX GXUXPGD X\JXODQPDV LVWH
KL]PHWOHULQH HUL LPOHUL ROPD\DQ 5RPD YH

%HOLUWLOHQ EHGHQVHO SUDWLNOHU Ù]HULQG
YH JÓÄPHQ JUXSODU LÄLQ DVO QGD V N NDU
ER\XWODUGD EX LNL JUXEXQ HùLWLP ÄDO PD
VÙUGÙUÙOÙUNHQ \HUHO ER\XWWD NDU OD OD
7ÙUNL\HpQLQ pOL \ OODUGD ED OD\DQ $YUX
ED O FD ELU GÓQÙP QRNWDV ROPX WXU $NN
5RPDQODU 7ÙUNL\HpGHNL \RNVXOOXN YH VRV
pGD ED OD\DQ 5RPDQ $Ä O P YH EHUDEHUL
SURMHVL LOH VL\DVDO JÓUÙQÙUOÙN HOGH HGH
NDU OD ODQ]RUOXNODU D DUDN JÓÄPHQ YH
*HQHO 0ÙGÙUOÙùÙQÙQ DÄ OPDV LOH ÄH
$\Q]DPDQGD $FLO 6RV\DO *ÙYHQOLN $ù (661
EÙWÄH SURJUDPODU LOH JÓÄPHQ JUXSODU HN
$QFDN KHU QH NDGDU HOGH HGLOHQ NXUXPVD
NXUXOX ODU Q Q \D\J QOD PDV LOH JÓVWHUVH
QLWHOHQGLULOPHVL GHYDP HWPL WLU 8 WXN

'ÙQ\DGD ROGXùX JLEL 7ÙUNL\HpGH GH JÓÄPHQC
\DUDWDFDNODU NRUNXVX LOH UNÄ VÓ\OHPOH
8]SHGHU 'DQRYD 5RXVVLQRYD ³]ÄHOLN *ÓN
JHQHOOLNOH oSLVp YH oVDSN Q K UV]ODUp RO
WKH ULJKWV RI 5RPD JÓÄPHQOHU oI UVD
RODUDN EHWLPOHQPHNWHGLU 1D\DUL +
HWPHNVL]LQ 5RPDQ YH JÓÄPHQ QÙIXV EX V Q
GÙ ÙN ELU WRSOXPVDO SR]LV\RQD LQGLUJHQP

0DKDOOHVLpQGH ,UDNO JÓÄPHQOHU LOH 5RPD
5RPDQ PÙ]LV\HQOHULQ oÄLQJHQH p ,UDNp Q 7HC
RODUDN VR\XWODQPDV JÙQGHOLN KD\DWWD RC
HWPHNWHGLU

5RPDQ YH ,UDNO QÙIXVD ELUELULQH SDUDOH
'HPLUOLEDKÄH 0DKDOOHVL D\U PF VÓ\OHP YH
VÙUHFLQGH QH ÓOÄÙGH DUWW ù PHVHOHVLQH C
VÙUHFL KDOHQ GHYDP HGHQ YH 9HKEL .RÄ $QD
GHVWHNOHQHQ RODQ JHQL ÄDSO ELU SURMHQ
UNÄ VÓ\OHP YH PHN¿QVDO SUDWLNOHULQ VDC
SUDWLNOHU Ù]HULQGHQ QDV O \HQLGHQ HNLC
JHOL WLULOHQ NDUDQWLQD X\JXODPDODU NR
%HFNHWW RODUDN GHùHUOHQGLULUNHQ
5RPDQ QÙIXV PDKDOOHGHNL VDOJ Q Q \D\ OPDV
%X GRùUXOWXGD EX DUD W UPD PHYFXW VRV\D
NDPX VDùO ù Q Q GHPRNUDWLN \ÓQWHPOHUH GD
WDEDQGDQ EL\R VL\DVHW 6RWLULV $JDLQVW $
LOH JHOL WLULOHELOPHVLQL QDV O HQJHO

&29,' VDOJ Q LOH ELUOLNWH JHOHQ EHGHQ
QDV O ÓWHNLOH WLUPH DUDF QD GÓQÙ WÙùÙQÙ
\RO DÄW ù Q LQFHOH\HQ EX ÄDO PD DQD DN\
0DKDOOHVLpQLQ VRV\R PHNDQVDO EDùODP PH
GRùUXOWXGD KDYD IRWRùUDßDU YH VDKDGD \
JHÄLUGLùL VRV\R PHNDQVDO GHùL LP VÙUHFL JC
ÄDO PDGDNL NRQXPX YH DUD W UPD VWUDWHI
VDùODQPDNWDG U ¹ÄÙQFÙ EÓOÙPGH VRV\DO X\
ÄDO PDODU JÓ] ÓQÙQH VHULOHUHN GHPRNUDW
ROPDG ù WDUW OPDNWDG U 'ÓUGÙQFÙ YH EH
NUL] VÓ\OHPOHULQLQ VRV\DO ÙUHWLP SUDWLN
VDùO NO NDPX SROLWLNDODU Q SODQODQPDV

'HPLUOLEDKÄH 0DKDOOHVL YH 0DKDOOH 6DNLQC

¤DQND\D LOÄHVLQH EDùO &HEHFL 0DKDOOHVLp
V Q UODU QGD \HU DOPDNWDG U HNLO +H
ELU X]DQW V RODUDN NDU W U OVD GD 7DOD
'HPLUOLEDKÄH &HEHFL V Q U G U %DW GD 3OH
\HU DOG ù 'HPLUOLEDKÄH 0DKDOOHVL D\Q]DP
GÓQÙ ÙPH XùUDPDP VD\ O PHNDQODUGDQ ELU

EÙ\ÙN ÓOÄHNWH ,UDNO JÓÄPHQOHULQ JHOL L
PHNDQVDO GÓQÙ ÙPOHU \D DQPDNWDG U 0HY
HQ ID]OD KLVVHGLOGLùL ELUELULQH SDUDOHO
8]JÓUHQOHU 6N YH $ùDÄO 6N 5RPDQ \HUH
NRQDNODPD Ó]HOOLNOHUL VHUJLOHUNHQ HVNL
RODQ VRV\DO X\XP \HQLGHQ \DS ODQPDNWDG U

HNLO 'HPLUOLEDKÄH 0DKDOOHVLpQLQ 8OXV YH .] OD\p

%LUELULQH SDUDOHO RODQ 8]JÓUHQOHU 'RùD
ROGXùX VRV\DO YH NXUXPVDO WRSODQPD QRNV
'HPLUNDS 6RNDNpWD 'HPLUOLEDKÄH EDQOL\Ó
NDKYHKDQH 'RùDQEDKÄHVL 6RNDNpWD ELU G
ONRNXOXpQXQ JLUL L KHPHQ ÙVWÙQGHNL 8
UHVWRUDQODUGDQ RWHOOHUH ELUÄRN NÙÄÙN
2VPDQO 7ÙUNPHQOHUL <DUD POD PD 'HUQHùL
*UXSODU DUDV LOHWL LPH \RO DÄDELOHFHN E
YH G OD\ F VÓ\OHPOHULQ ÓQÙQH JHÄLOHPHPL

' OD\ F VÓ\OHPOHULQ NXUXPVDOOD PDV NHQ
0DKDOOH VDNLQOHUL WDUDI QGDQ oÄLQJHQH
5RPDQ PÙ]LV\HQOHULQ \RùXQOXNOD \D DG ù E
L OHWPHFLOLùLQL \HUHO KDONWDQ NL LOHULQ
\D] QGD DÄ ODQ 0Ù]LV\HQOHU 'HUQHùL EXOXQP

%X NRQX 9(.$0 ÄDO PDV EÙQ\HVLQGH GDKD GHWD\O EL

L OHWPH KDULFL NRQXWODU EXOXQPDNWDG U
VDKLS RODQ EX VRNDN ,UDNO JÓÄPHQOHULQ
EXUD\D DO QPDV LOH \RùXQOD PD \D DPDNWDG
6RNDù GHPHNWHGLU ¹VWÙQGHNL 8]JÓUHQOHU
DQD DUWHUL ROPX WXU

7HODIHUOL JÓÄPHQOHULQ PDKDOOH\H JHOPH\H
JHQHOLQGH YH EX VRNDNODU Ó]HOLQGH GÓU\
\D DQDQ EX G JÓÄ LOH ELUOLNWH \HUHO KDON
\ OO N WRSOXPVDO X\XP ER]XOPX YH \HQLGHQ
JÓÄPHQ QÙIXVXQ \RùXQ ROGXùX EÓOJHGH \D D
EÓOÙPÙ HYOHULQL VDWDUDN \D GD NLUDGDQ Ä
<D DQDQ EX QÙIXV oWUDQVIHULQHp EDùO RODU
GRùX FHSKHVLQGHNL VRNDNODU ,UDNO JÓÄP
'HPLUOLEDKÄH ONRNXOXpQXQ DLEHOL ELU HN
GÓQÙ ÙPGÙU 2NXO LGDUHVL KHU QH NDGDU
ROVD GD DO QDQ K]O ELU NDUDUOD \ O QG
YHUHELOPHN DG QD \HQLGHQ DÄ OP W U $QFD
ND\QD PDV QD RODQDN VDùOD\DELOHFHN ELU K
IDUNO O NODU Q NDU NDU \D JHOGLùL ELU \Ù]
LVH \LQH IL]LNVHO ER\XWWD \D DQP W U 'HPLU
NÓSUÙ\OH PDKDOOHQLQ JHUL NDODQ QD EDùOD
NÓSUÙ\Ù \ NP YH VRNDù L]ROH ELU KDOH JH
GXUXPX SURWHVWR HWPL ROVD GD *LULWRùC
PDKDOOHQLQ JHUL NDODQ QGDQ X]DNOD W U O
HOGH HGLOHQ QÙIXV YHULOHUL LVH PDKDOOHQ
QH NDGDU XIDN ÄDSO GDOJDODQPDODU JÓUÙO
PDKDOOH QÙIXVXQXQ pXQXQ WD QPDV LOH J

&29,' %DùODP QGD <HUHO +DON 5RPDQODU Y

7ÙUNL\H &XPKXUL\HWL 6DùO N %DNDQO ù ÙON
DÄ NODG YH DUG QGDQ ÙONH 0DUW WD NDU
O + I] VV KKD .XUXOX NDUDU \OD PDQDYODU
RODELOHFHùL ÄRùX NÙÄÙN ÓOÄHNOL L OHWPH
EDKVHGLOHFHN EHGHQVHO X\JXODPDODU Q ND
VDORQX PHUNH]L NXDIÓU YH EHQ]HUL L OHWP
JHÄPHOHULQH L]LQ YHULOGL .DUDQWLQD WHG
NRQWURO DOW QD DO QP O 8PXPL + I] VV KK
WDNLEHQ ORNDQWD NDIH SDVWDQH NDIHWHU
RNH\ WDYOD R\XQODU YH QDUJLOH VDW ODU
R\XQ YE LOH EX DPDÄOD \DS ODQ FDQO PÙ]LN
3D]DUWHVL JÙQÙQGHQ LWLEDUHQ VDDW \H
EHOLUWWL . VD ELU VÙUH VRQUD +D]LUDQ
GLQOHPHVLQH \ÓQHOLN PÙ]LN \DS OPDV QD PÙ
YH WHPDVD QHGHQ RDELOHFHN GDQV R\XQ YE
\DS ODPD\DFDù YH \DS OPDV GXUXPXQGD Dù
7HPPX] GD LVH UHVWRUDQODU NDIHOHU SDVW
\ÓQHOLN \DU NDW NDUDQWLQD ÓQOHPOHUL W
YH JHFH NXOÙEÙ JLEL XPXPD DÄ N LVWLUDKDW
EX \DQD NDSDO NDOPD\D GHYDP HWWL (\OÙ
DQD IDDOL\HW DODQODU DONROVÙ] NDIH YH\D
$ÄPD YH ¤DO PD 5XKVDWODU QD OL NLQ <ÓQ
HGHUHN \HQLGHQ UXKVDWODQG UPD L OHPL \D

GÙ]HQOHPHQLQ DUG QGDQ LVH ÙONH VRNDùD
NDUDQWLQD ÓQOHPOHULQH JHUL GÓQGÙ $QND

%X WÙU N V WODPDODU GÙQ\DQ Q GÓUW ELU \D
UHIDK Q FLGGL HNLOGH NÓWÙOH WLUPL YH V
5RPDQODU Q YH JÓÄPHQ GXUXPXQGD ROGXùX J
HUPHVL EX NL LOHULQ D U \RNVXOOXN LOH E
ÓWHNLOH WLULOPHVLQH \RO DÄP W U 1LWHNL
SL\DVDV QD YH EDU QPD\D HUL LP HNVLNOLùL
]DPDQ NHQGL GXUXPODU QGDQ VRUXPOX RODUD
YH &HQJL] 9LUÙVÙQ HNRQRPLN HWNLOHUL
.X]H\ 0DNHGRQ\D 6 UELVWDQ YH 8NUD\QD GD \D
JHOLULQLQ D]DOPDV QD QHGHQ ROPDNOD NDOP
ROGXùX JLEL VLODK]RUX\OD WÙP PDKDOOH ÓO
\ROX\OD GDPJDODPD\ DUW UP W U +ROW
V Q UODU Q Q NDSDW OPDV QHGHQL\OH qGÙQ\D
HGHQ ELUÄRN LQVDQ 6Ó]OH PHpQLQ VDùC
UHMLPLQGHQ \DUDUODQPDQ Q KLÄELU \ROX RO
V

7ÙUNL\H GH QH 5RPDQODUD QH GH JÓÄPHQOHUH
ELU GDPJDODPD VÓ] NRQXVX GHùLOGLU <LQH G
DUDV QGD L ND\E QD QHGHQ ROPX WXU NL X
VDOJ Q ÓQFHVLQGH QRUPDO L OHUGH ÄDO PDN
*HÄLFL .RUXPD NDSVDP QGDNL JÓÄPHQOHULQ
Ó]HO KD\ U NXUXPODU YH \HUHO \ÓQHWLPOHU
VRUXQ JÓÄPHQOHULQ \DNOD N XQXQ X]DNW
GD KLVVHGLOPHNWHGLU %XQXQOD ELUOLNWH
\ÓQHOLN ROGXùX LÄLQ EX NL LOHULQ ND\ WO
VDùO N KL]PHWL DOPDODU QD L]LQ YHULOHUHN

(NRQRPLN N V WODPDODU KDVWDO ù Q \D\ OPD
\ÓQHOLN DO QDQ ÓQOHPOHU 'HPLUOLEDKÄH GH
DOHYOHQGLUPL WLU 5RPDQ YH ,UDNO JUXSOD
NDSDW OPDV YH WÙP PÙ]LN IDDOL\HWOHULQLQ
\RO DÄP W U 9LUÙVH PDUX] NDOPDNOD D U
Ä NPD]OD NDU NDU \D NDODQ 'HPLUOLEDKÄH
PHVDIH \Ù] PDVNHOHUL YH NL LVHO KLM\HQ JL
LPN¿QV] VRUXPOXOXNODU KDOLQH JHOGLùL ÄD
'HPLUOLEDKÄHOL ELU 5RPDQ JUXEX Dù UOD DO

NDPX SROLWLNDODU Q Q LKPDO HGLOPHVL Ù]H
3DUWLVL &+3 JHQHO PHUNH]L ÓQÙQGH ELU SU
YDU RODQ G OD\ F X\JXODPDODU NDUDQWLQD
LOH LYPHOHQLUNHQ \HUHO KDON DUDV QGD UD

$UD W UPD 3ODQ YH <ÓQWHPL

$QQHDQQHP YH GHGHP OHULQ VRQODU QG
DLOHPGHQ KLÄ NLPVH VRNDNWDNL ED] NRP XC
%HQ GH 'HPLUOLEDKÄH GH GRùXS EÙ\ÙGÙP YH Ä
NRP XODU Q Q RùXOODU YH\D WRUXQODU RO
\ O QGDQ VRQUD VRNDNWDNL \D DP P VRQD
DUDO NODUOD GD ROVD DQQHDQQHP YH GHGH

%X KLND\H ELU DUD W UPDF RODUDN ÄDO PD
ELU WDUW PD\ JHUHNOL N OPDNWDG U (EHYH
NÙÄÙN KHGL\HOHU YHUPH YH ELUELULPL] KDNN
RODUDN WDQ PODQDQ *XHVW :LHU]ELFNL
EXQODU \DOQ]FD ELU VRNDN LOH V Q UO ND
GLùHU VRNDNODUD GRùUX JLWWLùLPGH ND\E
PDKDOOHQLQ ÄRùXQD WDPDPHQ \DEDQF \G P %
GHQH\LPOHULPL VDOJ Q V UDV QGD JÙQOÙN \D
\DEDQF RXWVLGHU RODUDN NRQXPODQG UPD
.RÄ $QNDUD $UD W UPDODU 0HUNH]L 9(.$0 LÄ
DUD W UPDNWD ROGXùXP VRV\DO ROJXODU Q J
VDNLQL ROPDN LQVDQODUD XOD PDP NROD\O
DUD W UPDF NLPOLùLPL ÓQ SODQD VÙUGÙP %
OHDUQHU RODQ Ù]HUH LNL D U NXWEXQ ELUC
ÓWHNLQL QDV O LQ D HWWLùLQL NH IHGHUNHC
SURMHVLQL NDYUDPODU YH WHRULOHUOH PRGH
DUD W UPD SODQ Q Q PDQW ù GD UHWURGXFWL
JHOGL ÄÙQNÙ EX ÄDO PDQ Q DPDF VRV\DO
\HQLGHQ ÙUHWLPLQGH YH \RUXPODPDV QGD NX
ELU GÙ]HQOLOLùLQ ÙUHWLOPHVLQGHQ VRUXPO
WHVSLW HWPHNWLU V

+HU JUXEXQ VDNLQOHUL LOH GÙ]HQVL] VRKEH
PÙODNDW \DS OP W U %XQODU Q L RUWD Y
ROXUNHQ pVL 5RPDQ ,UDNO 5RPDQ YH
³UQHNOHPLQ \D GDù O P LOH DUDV QGD GH
EXJÙQÙQ 'HPLUOLEDKÄH VLQL JHÄPL LOH N \D

EHOLUOHPHOHULQLQ LVWHQGLùL qVDKD WXUXr
%HQ]HU VRUX JUXEX NÙÄÙN GÙ]HQOHPHOHU LO
ÄHYULPLÄL YH ÄHYULPG GÙQ\DODU Q ELUELU
GHùHUOHQGLUHUHN QHWQRJUDILN \ÓQWHPOHU
%X DPDÄOD ÄRùX X DQGD PDKDOOHGH
ROX WXUXOPX LNL)DFHERRN VD\IDV QGD $QN
ELU DLOH\L] \HU DODQ JÓQGHULOHULQ LQFHOH
\DOQ]FD &29,' EDùODP \OD LOJLOL YHULOHU

.DYUDPVDO YH .XUDPVDO 3HQFHUH t 1H\LQ .UL]I

\ O QGD 6XUL\HpGH \D DQDQ LÄ VDYD OD 7ÙU
NÙOWÙUHO YH HNRQRPLN HWNLOHUL NDU ODP
JLGLOPL WLU 7RSOXPVDO 8\XP WHPDV DOW Q
VRV\DO SURMH YH ELOLPVHO DUD W UPD \D] OD

$YUXSD EDùODP QGD JHOL WLULOHQ SURMHOHU
oVRV\DO LOL NLOHUp YH oRUWDN ID\GD DQOD\
%DN 6RFLDO FRKHVLRQ DQG ZHOO EHLQ
JHQHOLQGH RUWDN GHùHUOHU SD\OD ODQ]RU
JÙYHQ YH XPXW WHPDV DOW QGD X\JXODPDODU
WRSOXP LÄHULVLQGH GHQJHOL JHOLU GDù O P
.DQW]DUD HVDVHQ QHROLEHUDO SROLWLNL
ÓOÄHNOL VXÄODU YH IDUNO ÄH LW NDQXQVX]O
X\XPD EDù PO O N YH VRQ RODUDN GD ÄRFXN
SROLWLND SODQODPDV JHOL WLUHUHN D PDN P

$QJOR 6D[RQ YH XOXVDO \D] QGD JHOL WLULOH
DùODU Q Q GLUHNW YH GROD\O HWNLOHUL VR
GDYUDQ r GXUXPODU ÓOÄÙOPÙ WÙU)ULHGNL
D DPDODU LQFHOH\HQ EX NDYUDPVDO SHQFHU
NXOODQ OG ù QGD JHQHOOLNOH WRSOXPVDO N
³]D Ä OD V *ÓÄ NRQXVX WDUW PDOD
KDON LOH JÓÄPHQOHU DUDV QGDNL NDSVD\ F O
$Y DU .DGNR\ %LOJLÄ 7ÙUNL\HpGH ND
NDOG ù Q EHOLUWHQ DUD W UPDODU <HQLJXQ
YDWDQGD O N YH PÙOWHFL KDNODU QGDQ WDP
NDSVD\DPOW QGD EXOXQGXNODU NDQ V QD YDUI

.DYUDP Q RULMLQDO KDOL 'LIIHUHQWLDO ,QFOXVLRQ

+HUKDQJL ELU VRV\DO X\XP SURMHVL 'HPLUOL
DQFDN WHULPLQ NDYUDPVDO RODUDN X\JXOD
D\HW ,UDNO JÓÄPHQOHULQ PDKDOOH\H JHQL
G JÓÄH VHEHEL\HW YHUPL YH EÓOJHQLQ GH
VRQXFXQGD LVH 5RPDQODU YH \HUHO KDON D
NRSPX YH \HQLOHQPH VÙUHFLQH JLUPL WLU
GLQDPLNOHULQ JHOL PHVL VRQXFX VRV\DO X\X
NDYUDPVDOOD W U ODELOHQ EX VÙUHÄWH 'HPL
\DSPD\D ED ODG ù VÓ\OHQHELOLU %X IDUNO
$YUXSD %LUOLùL ÙONHOHULQGH \RùXQOXNOD
0RRUH YH V Q UODUDUDV NUL] %RLQ
VÓ\OHPOHUL Ù]HULQGHQ EX VÓ\OHPOHUOH ED
DUD\ YH HPODNÄ ODU Q VÓPÙUÙVÙ Ù]HULQG
N V WO NRQXWODUGD NLUD EHGHOLQL D]DOWP
VRNDNWD NHQGL NÙÄÙN ÓOÄHNOL EDQOL\ÓOH
RODUDN \RUXPODQDELOLU

%X EDùODPGD PDKDOOHQLQ SDUÄDODQP W
&29,' VDOJ Q LOH PÙFDGHOH DPDF \OD 6RWL
JHUÄHNOH WLULOPHVL SHN GH PÙPNÙQ JÓ]ÙNPH
GLOOHQGLULOGLùL EX JÙQOHUGH GHYOHWLQ
X\JXODPDODUGDNL JÓ]HWOHPH VXUYHLOODQP
PDUX] NDOPDNWDG U 7RVFDQR .DUDQWL
HOH WLULOHU JHQHOLNOH NL LVHO YHULOHU
)RXFDXOWpQXQ EL\R VL\DVHW NDYUD
DWDQ XOXVODUDUDV \D] QGD SDQGHPLQLQ \DO
DUWW UG ù LÄLQ D\Q]DPDQGD VRV\DO ELU VU

1LWHNLP ELU NL L\L ÓOÙPH VHYN HWPH \D GD
UNÄ O N YH VRV\DO GÙ PDQO N LOL NLOHUL
GLùHUOHULQGHQ GDKD ID]OD RODQ JUXSODU
KDILßHWLOPHVL DPDF \OD ÙUHWLOHQ JÙYHQO
WRSOXPXQ EÙWÙQÙQH SRWDQVL\HO ELU WHKG
1LWHNLP YDWDQGD ODU Q EHOLUWLOHQ
HWPHVLQL VDùOD\DQ 6DùO N %DNDQO ù WDUDI
PRELO X\JXODPDV JÙYHQFHVL] LQVDQODU Q S
NXOODQ OPD SRWDQVL\HO WD PDNWDG U

.DPX VDùO ù Q JÙYHQOLN PHVHOHVL KDOLQH J
WDEDQGDQ EL\R VL\DVHW NDYUDP Q RUWD\D
]L\DGH EÙWÙQFÙO JHOL HELOHFHN ELU KDUHNH
GÙ]HQOHQPHVLQL WH YLN HGHUHN NDPX VDùO ù
NDW O P LOH \HQLGHQ HNLOOHQGLUPHQLQ PÙR
VRUXPOXOXN RODUDN JHOL HQ EHGHQVHO SUDV
NL LVHO U]D LOH \HUHO ÓOÄHNOHU Ó]HOLQGHN
WRSOXP JHQHOLQGH GDYUDQ VDO GHùL LNOLN
%LOJLQLQ GHPRNUDWLNOH PHVL ELUH\VHO
+,9 YLUÙVÙQGHNL $&7 83 KDUHNHWL LOH ROGXù
\DNOD P Q VDùODQPDV JHUHùLQL YXUJXODP W

'HPLUOLEDKÄHpGH EXOXQDQ SDUÄDODQP WRS
WDEDQGDQ EL\R VL\DVHW ÄRN GD RODV JÓ]ÙNP
WRSOXPVDO G ODQPDGDQ ND\QDNODQDQ EX VR
'ROD\ V \OD EX ÄDO PDQ Q DPDF GDKD HIIDI
NR XOODU YH VDùO N KL]PHWOHULQH WDP HUL
NDYUDP Q 'HPLUOLEDKÄH 0DKDOOHVLpQGH WH
EÙWÙQFÙO SROLWLND SODQODPDODU JHOL WL
PDKDOOHGH &29,' VÙUHFLQGHNL JÙQGHOLN K
EL\R VL\DVHW ÓQÙQGHNL ÙÄ DQD WRSOXPVDO
ÙÄ G ODPD SUDWLNOHUL 5RPDQODU Ó]HOLQGH
WHVOLPL\HW YH \HUHO KDON Ó]HOLQGH SDQLN

&29,' ³QFHVL 0HYFXW ' ODPD 3UDWLNOHUL

3DQGHPL RUWD\D Ä NPDGDQ ÓQFH PDKDOOHGH
EDVPDNDO S DOJ ODU Ù]HULQGHQ ÙUHWLOPL W
Ù\HOHUL LOH \DN Q LOL NLOHU NXUPDP NL LO
YH JÓÄPHQOHU Ù]HULQGH NÙUHVHO ÄDSWD \D\
KDON Q NÙOWÙU IDUNO O ù WHPDWLùL Ù]HULQG
NÙOWÙUHO IDUNO O NODUGD NRQX PD \ÙUÙPH
KDUHNHWOHULQL KHGHI DODQ VRUXQODU YXUJ
NDU VÓ\OHPOHULQ ÙUHWLPLQH \RO DÄP W U
G ODPD SUDWLNOHUL WRSOXPVDO FLQVL\HW
DOW QGD HOH DO QPDNWDG U

.DG Q JÓUÙ PHFLOHUH RODQ HUL LPLQ \HWHUO
,UDNO EX DUD W UPDQ Q ED O FD HNVLNOLù
JÓUÙ PHFLOHU GLùHU JUXSODU Ù]HULQH G OD
LQ D HWPHNWHGLU 7RSOXPVDO FLQVL\HW WHPL

NDG QODU Q VDGHFH GDP]O N RODUDN NXOOD
JÓUÙQÙ OHUL YH \D DP WDU]ODU Ù]HULQGHQ J
YH JÙ]HOOLN VDORQX]L\DUHWOHUL EX DOJ OD
¹UHWLOHQ WRSOXPVDO FLQVL\HW WHPHOOL Ó
JÓUÙ PHFL WDUDI QGDQ GD \LQHOHQPL WLU ,U
HGHQ JL\VLOHU JL\PHVL YXUJXODQDUDN GLQGD
LVH ,UDNO HUNHNOHULQ NDG QODU Q QDPXV
VÓ\OHPL WLU %HQ]HU HQGL HOHU PDKDOOHGH
DJUHVLI ELÄLPGH LIDGH HGLOPL WLU

' OD\ F VÓ\OHPOHULQ LNLQFL ER\XWX \HPHN
,UDNO JÓÄPHQOHULQ SLV YH NRNX\RU ROGX
VRPXWOD W U OPDNWDG U ,UDNO JÓÄPHQOHU
VÓ\OHPOHUL GDKD GD NÓUÙNOHPL WLU <HUHO
NDGDU \DQ PGD ELU NHEDSÄ ÓWHNL WDUDIWD
DVOD DOPDP <HPHNOHULQ NRNXVX ELU JDULS
NHQGL HVQDI P]D NDWN GD EXOXQPDN LVWHU
KDON ,UDNO DLOHOHULQ NDODEDO N \D DPDOI
NRNXODU Q ROX DELOHFHùLQL NDEXO HWVH GH
DOJ V G OD\ F VÓ\OHPOHUGH V NO NOD \HU H

¹ÄÙQFÙ ER\XW NLPOLN LQ DV Ù]HULQGHQ JH
2VPDQO 7ÙUNPHQOHUL RODUDN WDQ WPDNWDG
JHQHOLQGH NDEXO HWWLUPL ROVD GD PDKDO
Ù]HULQGHQ EXQX UHGGHWPHNWHGLU .LPOLN Ù
RODQ DLGL\HW ,UDNO JÓÄPHQOHULQ JÙQGHOI
JHOL HQ G OD\ F VÓ\OHPOHULQ ELUD] GD ROV
VRNDNODUGD JH]LQPH JÙUÙOWÙ \DSPD YH N
IDUNO OD DQ ,UDNO JÓÄPHQOHULQ 7ÙUNOÙNOI

6RQ RODUDN ,UDNO JÓÄPHQOHULQ NHQWOL
V NO NOD YXUJXODQP W U .HQWOLOLN VÓ\OHI
GDKLO ROPD ÄDEDV Q HQJHOOHUNHQ D\Q]DI
JÙÄOHQGLUPL WLU 7HODIHU LOÄHVLQGH N UVD
WÙP PÙODNDWODUGD EX VRUXQX NHQGLOHULQ
DVO QGD KDSLVKDQHGH\L]r VÓ]OHUL\OH JÓUÙ
DO N ROPDG NODU EX NR XOODUGDQ GROD\
EHOLUWPL OHUGLU 1LWHNLP DSDUWPDQ KHU G
RODUDN JÓVWHULOPL ROVD GD LOHUOH\HQ]DI
LOH NXOODQ OPD\D ED ODQP W U (UPDQ

GLVLSOLQH HWPH\H \ÓQHOLN \DS ODQ NHQWVH
WDUDI QGDQ NXOODQ ODQ EX WDQ PODPDGD DS
KD\DW LOH DLOH \D DP Q NDPX YH Ó]HO DODQ
(UPDQ +DWLERùOX V 'ROD\ V \OD E
VRQUDV 'HPLUOLEDKÄH PDKDOOHVLQGH \D DG
JHÄLUGLùL GÓQÙ ÙP LOH EHQ]HUOLN JÓVWHUPH

%HQ]HU ÓWHNLOH WLUPH SUDWLNOHUL 5RPDQO
LÄLQGH NDU UHDNVL\RQODUD \RO DÄP W U +
ÓUJÙWOHQPH JÓUÙOPHVH GH 5RPDQ YH JÓÄPH
Ù]HULQGHQ NRUXPD\D ÄDO W ù NLPOLN \DS V
7ÙUNPHQ RODUDN WDQ POD\DQ ,UDNO JÓÄPHQO
JHUÄHN 7ÙUNOÙN ROGXùXQX YH \HUHO KDON Q D
HWPL OHUGLU ³UQHùLQ ELU ,UDNO JÓUÙ PHFL
%D\UDPGD NRP XODU]L\DUHW LÄLQ JH]PH\H Ä
DÄPDG r LIDGHOHUL\OH EX IDUNO O ù YXUJXOD
\R]OD PD\ KHGHI DODUDN ELU NDU VÓ\OHP ÙU
\DUDW ODQ G ODQPD\ ELU ÓOÄÙGH JÙÄOHQG
HOH WLUHQ ,UDNO JÓÄPHQOHU NHQGL JHOHQH
HGHUHN EHQ]HU HNLOGH \DSPD\D ED ODP ODU

<HUHO KDON WDUDI QGDQ NXOODQ ODQ D\U W
ROPDQ Q PDQW ù Q KHGHI DOP ODUG U <HUHO
5RPDQODU LQ D HGLOPL 7ÙUNOÙN NDYUDP Q Q
JHWLUHUHN RQODU Q VÓ]GH oHOLWLVWp \DNOD
EX HOLWLVW VÓ\OHPOHULQ PHVOHNOHULQL GH
5RPDQODU Q PÙ]LùH RODQ \HWHQHNOHULQL ÄDO
QH EL]LP ÄDO W ù P] NR XOODUGD ÄDO DELO
JHOLS EL]H ODI HGL\RUODU WHSHGHQ EDN \RU
VHUJLOH\HELOL\RUODU D U \RUXPr LIDGHOHUL
HNLOGH PDUX] NDOG NODU G ODPD YH ÓWHNL
GDYUDQ YH VÓ\OHPOHUL ,UDNO JÓÄPHQOHUH
GDYUDQ ODU GDKD ÄRN VLWHP HNOLQGH ROPD

&29,' 'ÓQHPL *HOL HQ ' ODPD 3UDWLNOHUL

6DOJ Q Q RUWD\D Ä NPDV \OD EHUDEHU PDKDO
GD JÙÄOHQPL WLU 5RPDQ YH ,UDNO JÓÄPHQO
ROGXNODU QGDQ YLUÙVWHQ NRUXQPD RQODU I
ÓQOHPHN DPDF \OD NDQXQHQ]RUXQOX N O QDQ
DG QD IDUNO JHOLU ND\QDù EXOPD\D ÄDO DQ
RODPDP W U $QFDN EX GXUXP EHUDEHULQGH \

6DOJ Q Q PDKDOOHGH NDODEDO N JUXSODU K
\D\ ODFDù Q KHP)DFHERRN JUXSODU KHP GH \
NDUDQWLQD ÓQOHPOHULQLQ L OHYVL]OLùLQL
,UDNO JÓÄPHQOHULQ NDODEDO N ROPDV Ù]HU
PÙFDGHOHGH \DS OPDV LVWHQHQ EHGHQVHO
KHGHI DOPD\D ED ODP W U 5RPDQODU Ù]HULQ
VDOJ Q VÙUHFL LOH LOJLOL KHUKDQJL ELU VÓ\
LOJLVL]OLN RODUDN JÓUÙOPÙ YH NHQGL NHQG

6RV\DO YH HNRQRPLN ER\XWODU JÓ] DUG HG
VRQXFX RODUDN JHQHOL RUWD JHOLU V Q I Q
SUDWLNOHUL X\JXOD\DPD\DQ JUXSODUD NDU
1LWHNLP ELU PDKDOOH VDNLQL q9DOODKL EH
1H PDVNH WDN \RUODU QH KLM\HQ NXUDOODU
KDOLQGH JH]L\RUODU YH KHUNHV KHUNHVOH W
%HQFH W S GÙQ\DV EXQODU DO S LQFHOHPHO
WHNUDU ,UDNpD JÓQGHUPHQLQ WHN ÄÓ]ÙP RO
EXUD\D ,UDNO ELUL JHOGLùL]DPDQ HNVWUD W
NXOODQP W U $\U FD $QNDUD 'HPLUOHDKÄH
EHQ]HU VRUXQODU WDUW OPD\D ED ODQP W
RODQ SDQLN KDOL \HULQL JHQHO ELU E NN QO
G OD\ F VÓ\OHPOHU NRQXVXQGD ELU GHùL LP

HNLO ,UDNO ODU Q VRNDùD Ä NPD \DVDNODU QGD QHG

%X VÓ\OHPOHUH FHYDEHQ ,UDNO JÓÄPHQOHU
JHWLUPL OHUGLU *HOLU HOGH HWPHN DPDF \O
NHQGLOHULQL YLUÙVH DÄ N KDOH JHWLUGLNOH
GXUXPXQ RQODU LÄLQ]RUXQOXOXN ROGXùXQX
VRNDELOHFHN JÙYHQFH YH JHOLUOHULQLQ ROP
GXUXPX WHVOLPL\HW LIDGHOHUL NXOODQDUDN
LKWLPDOL YH EHUDEHULQGH ROX DELOHFHN V
³UQHùLQ ELU JÓUÙ PHFL q,UDNpWD\NHQ NDÄ W
YLUÙVWHQ PL ÄHNLQHFHùLP" 6RQXÄWD ÓOÙP G
GHùLOLP EX NRQXGDr LIDGHOHULQL NXOODQP
,UDNO JÓUÙ PHFLOHU \HUHO KDON WDUDI QGD
NDU O ù YHUPL OHUGLU q(ùHU EL]LP YLUÙVWH
\D GHPHN NL RQODUGDQ GDKD JÙÄOÙ\Ù] r ³WH
YLUÙV QHGHQL\OH KD\DW Q ND\EHWWLùLQL YH
EHOLUWHQ JÓUÙ PHFLOHU EX ROD\ODU $OODK
VÓ\OHPL OHUGLU

3DQGHPL LOH PÙFDGHOH \ÓQWHPOHUL NDSVDI
N \DVOD GDKD GD G ODQG NODU Q GÙ ÙQHQ 5
ELU VRUJXODPD JHOL WLUPL WLU 6XUL\HOL Y
VDùODQDQ VDùO N YH GLùHU KL]PHWOHUL V N
GRùUXOWXVXQGD \D DG ù JHOLU ND\ SODU QG
SDQGHPL VHEHEL\OH NDSDW ODQ PÙ]LNOL L OH
PDGGL ND\ S \D DG ù Q EHOLUWPL WLU %LU G
HWNLOHUL q%HQFH EX YLUÙV PLUÙV ROD\ODU
ELU X\GXUPD .HQGLOHULQGHQ ED ND NLPVH\L
NÓWÙ ROGXùXQX KLÄ GÙ ÙQPÙ\RUXP =HQJLQOH
ÄDO PDP] HQJHOOHQL\RU %X QDV O ELU VDÄ
pGH EX ÓQOHPOHU VRQXFXQGD \D DQDQ VRU
VDW D Ä NDUWDQ ELU GLùHU PÙ]LV\HQ LVH)
'HPLUOLEDKÄHpGH EXOXQDQ EL] 5RPDQODU $QN
\Ù]GH HOOLVLQL ROX WXUPDNWD\ ] $QFDN EL]H
ELU GHùHU YHULOGL 0Ù]LN Ó\OH KHUNHVLQ LFU
o6DQDWV] NDODQ ELU PLOOHWLQ KD\DW GDPDU
LÄHULVLQGH E UDN OG ù P] GXUXP \DOQ]FD E
NXOODQP W U <ÙNVHN JHOLUOLOHULQ UHIDK
SROLWLNDODU Q YXUJXOD\DUDN JÓUÙ PH \DS
NDUDUODU HOH WLUPL YH &29,' VDùO ùD \ÓG

6RQXÄ

%X DUD W UPD 'HPLUOLEDKÄH PDKDOOHVLQG
DOW QGD \DWDQ PHNDQL]PD\ HOH DOP W U
EHQLPVHPHPHQLQ PDKDOOHGH QDV O ELU ÓWH
ÄDO PD YLUÙVH NDU PÙFDGHOHGH JÙQGHOL
JÓ] DUG HGHQ NDPX SROLWLNDODU Q Q ÓWHN
DÄW ù Q LOHUL VÙUPHNWHGLU

0DKDOOHGHNL PHYFXW ÙÄ JUXS VDOJ QGDQ Ó
NLPOLN YH NHQWOLOLN NDWHJRULOHUL Ù]HUL
$QFDN VDOJ Q VRQXFX X\JXODQDQ NDUDQWLQD
\HWHUVL] NDOG ù JLEL VRV\R HNRQRPLN JÙYI
%Ó\OHFH \HUHO KDON JHQHOLQGH KDNLP ROD
GDPJDODPDQ Q WHPHOLQL ROX WXUPD\D VHEHE

3DQGHPL GÙQ\D JHQHOLQGH ELUH\VHO YH N
GHùL WLULUNHQ NUL] NDYUDP GD \D\J Q ELU
NDYUDPODU DOW QGD \HUHO ÓOÄHNWH JHOL H
PÙFDGHOHVL YHULOHQ \ÓQWHPOHULQ NDÄ Q OI
NÙUHVHO ÄDSWD \D\ OPDV RODUDN QLWHOHQQ
\ÓQWHPOHU EHUDEHULQGH NDÄ Q OPD] RODUD
KDOLKD] UGD PHYFXW RODQ G OD\ F YH ÓWHN
VRV\R PHNDQVDO NUL] ÙÄ DQD ÄHUÄHYH Ù]HUI
WHVOLPL\HW YH LQDQPDPD

%X GXUXP NDU V QGD WRSOXPVDO X\XPX ÓQF
KHU QH NDGDU LPNDQV] JÓ]ÙNVH GH 6RWLULV
EL\R VL\DVHW ELU Ä N \ROX VDùOD\DELOLU 1
&29,' LOH PÙFDGHOHGHNL ED DU V Q HOH I
ÓUQHN RODUDN GHùHUOHQQGLULOHELOLU 0HUN
GÙ]HQLQL WHN ELU PHUNH]L \ÓQHWLPGH WRS
.RUH KÙNÙPHWL HIIDI \ÓQHWLP DQOD\ Q RG
GHPRNUDWLNOH PHVLQL VDùOD\DQ EX \DNOD P
JHÄLULOLUNHQ &29,' pOD PÙFDGHOHGH GDKD
ELU .RUH VWLOL RODUDN ED DU ÓUQHùL HNOL

%X GRùUXOWXGD KHU QH NDGDU 7ÙUNL\HpGH
GD GHPRNUDWLN EL\R VL\DVHWLQ ÓQÙQÙ DÄP
X\JXODPDODU Q JHOL WLULOPHVL WH YLN HGLG
VDùO N JÙQFHOOH WLUPHOHUL ÓUQHùLQ JHÄV

NRQWURO YH WDNLEH GD\DO ELU \ÓQHWLP DQO
VRV\R HNRQRPLN EXKUDQODU Q ÓQÙQH JHÄHEL
VDGHFH YLUÙVOH PÙFDGHOHGH GHùLO LOHULG
VDùOD\DELOLU

6RQ RODUDN JHUÄHNOH HQ ELU ROJX\X NUL]
ÓOÄHNOL VR\XWODPD VHEHEL\OH KHU]DPDQ E
\D DQDQ \HUHO ÓOÄHNOL IDUNO O NODU NÙUH
NDYUDP Ù]HULQGHQ RNXPDN GXUXPX NDYUDPD\
NHOLPHVL NÙUHVHO ÓOÄHNWH JÓÄ NHQW VDùC
SROLWLND ÙUHWLPLQL WH YLN HGHUNHQ \HUHC
KHGHI DOPDNWDG U %X DUD W UPD 'HPLUOLED
YXUJXOD\DUDN LQFHOHPL WLU

.D\QDNÄD

6RFLDO FRKHVLRQ DQG ZHOO EHLQJ LQ WKH (8 (XURIRXQG

0D\ 7KH &RXQFLO RI (XURSH 3URWHFWLQJ WKH ULJKWV
FPV XSORDG SGI B5RPD SGI DGUHVLQGHQ DO QG

$NNDQ % 5RPD DQG UHSUHVHQWDWLYH MXVWLFH LQ 7XUN
8QLRQ (7+26 7RZDUGV D (XURSHDQ 7+HRU\ 2I MX6WLFH DQG IDL

$NNDQ % 'HQL] 0 % (UWDQ 0 7KH 5RPDQL]DWLRQ RI
LQ 7XUNH\ 5RPDQL 6WXGLHV

$QGHUVRQ % ,PJLQHG &RPPXQLWLHV /RQGRQ 1HZ <RUN

$QDUD 9DOLOLùL O 6DùO N 0ÙGÙUOÙùÙ .XUXO .DU
DQDUD GRS\DODU NDUDUODU '[H]HLQQGHQQ DVB QG UDUODU 8+.B

$6$0 6*'' &29,' ÙUNDLH pG HQGÙULQGHÙ ÓWN DO$QDLQL 66*N'W$6
]OHPH YH 'HùHUOHQGLUPH %LULPL $QDUD

$WDVHYHQ $ %DN ¤ 7ÙUNL\H GH 6RS\DO 8\XP 6DEDQF

%DEDQ) ,OFDQ 6 5\JLHO . 6\ULDQ UHIXJHHV LQ 7XU
QHJRWLDWHG FLWL]HQVKLS ULJKWV -RXUQDO RI (WKQLF DQG 0LJ

%DWXPDQ % 7KH VKDSH RI WKH QDWLRQ 9LVXDO SURGX
*HRJUDSK\

%HFNHWW / 0DUFK 2OGHU 3HRSOH ZRXOG UDWKHU GLH
7KH *XDUGLDQ KWWSV ZZZ WKHJXDUGLDQ FRP ZRUOG PDU
ORFNGRZQ KDUP XV HFRQRP\ WH[DV RIILFLDO GDQ SDWULFN DGU

%HUU\ 0 *DUFLD %ODQFR , 0RRUH . 3UHVV FRYHUDJH

WKH (8 D FRQWHQW DQDO\VLV RI ILYH (XURSHDQ FRXQWULHV 5

KWWSV ZZZ XQKFU RUJ EE F SGI

%ODLNLH 1 $SSURDFKHV WR 6RFLDO ,QTXLU\ &DPEULGJH

%RLQ $ 7KH 7UDQVERXQGDU\ &ULVLV :K\ ZH DUH XQSUHS
&ULVLV 0DQDJHPHQW -RXUQDO RI &RQWLQJHQFLHV DQG &ULVLV

%RXGLHX 3 7KH /RJLF RI 3UDFWLFH 6WDQIRUG 6WDQIRU

&HQJL] ³ &HQJL] & 3ROLWLFDO (FRQRP\ RI $QWL 5HIX
VXUL\HOHUGHIROVXQ +DVKWDJ 6 .DUOLGDJ 6 %XOXW 'Ù
&RPPXQLFDWLRQV DQG 0HGLD V ,*, *OREDO

'XUDNRùOX $ q6PDUWr .RUHD DQG &29,' ([SORULQJ WKH
&ROOHFWLRQ RI (VVD\V RQ .RUHDpV 3XEOLF 'LSORPDF\ 3RVVLE
)RUHLJQ $IIDLUV 5HSXEOLF RI .RUHD

(UDQ 7 6TXDWWHU JHFHNRQGX +RXVLQJ YHUVXV $SDUW
3HUVSHFWLYHV +DELWDW ,QWHUQDWLRQDO

(UDQ 7 +DWLERùOX % *HQGHULQJ 5HVLGHQWLDO 6S
(VWDWHV LQ 7XUNLVK 5HQHZDO 3URMHFWV &LW\ &RPPXQLW\

)RUUHVW 5 .HDUQV $ 6RFLDO &RKHVLRQ 6RFLDO &DS

)R[79 -DQXDU\ $QD +DEHU KWWSV \RXWX EH X S&&= M

)ULHGNLQ 1 (6RFLDO &RKHVLRQ $QQX 5HY 6RFLRO

*DOLS 'DQJHURXV :RUGV 2QOLQH &LWL]HQVKLS DQG &
(FRQRPLFV 6RFLRORJ\

*LULWRùOX ' 0DKDOOH LNL\H EÓOÙQGÙ +ÙUUL\HW K
DGUHVLQGHQ DO QG

*XHVW $ 0 :LHU]ELFNL 6 . 6RFLDO 7LHV DW WKH 1HL
$IIDLUV 5HYLHZ

*ÙUERùD 1 7ÙUN <XQDQ 1ÙIXV 0ÙEDGHOHVL YH 'HYOHWLQ
%LOLPOHU 'HUJLVL

+ROW (&29,' ORFNGRZQ RI 5RPD VHWWOHPHQWV LQ 6O

-HQVRQ - 0DSSLQJ 6RFLDO &RKHVLRQ 7KH 6WDWH RI &DQ

.DQW]DUD 9 6RFLDO &RKHVLRQ DQG 'HYHORSPHQW 6RFLD

.DYDV $ $Y DU .DGNR\ 2 %LOJLÄ (¤ VWDQEXO
7(3$9 <D\ QODU

.R]LQHWV 5 9 1HWQRJUDSK\ 'RLQJ (WKQRJUDSKLF 5HVHDU

0DGGHQ ' 0DUFXVH 3 ,Q 'HIHQVH RI +RXVLQJ 7KH 3ROL

1DUOL 1 ³]D Ä ODU 0 8QGHUVWDQGLQJ DQG 0HDVXULQJ
&DVH RI =H\WLQEXUQX 5HIXJHH 6XUYH\ 4XDUWHUO\ t

1D\DUL ' 7KH 8QJUDWHIXO 5HIXJHH :KDW ,PPLJUDQWV 1HY

³]NXO ' &RYLG 6DOJ Q 6XUHFL YH 6RQUDV LÄLQ 'Ù]HQ
³QHULOHUL VWDQEXO VWDQEXO 3ROLWLN $UD W UPDODU (QVW

3HU]\QD 0 7KH 6XEVWDQFH RI 6ROLGDULW\ :KDW WKH 5HV
5HIXJHH 5HJLPH 5\HUVRQ &HQWUH IRU ,PPLJUDWLRQ DQG 6HWWO

6DùO N & 3DY\RQ .ÙOWÙUÙQÙQ $LOH +D\DW QD (WNLVL 0D

6DUDÄRùOX & 0LJUDWLRQ 1HROLEHUDOLVP DQG (WKQLFL]
,]PLU 7XUNH\ 8QLYHUVLW\ RI :HVWHUQ 2QWDULR 6RFLRORJ\ /R

6DUDÄRùOX & %HODQJHU ' /RVV DQG [HQRSKRELD LQ W
7XUNH\ 3DWWHUQV RI 3UHMXGLFH t

6H]JLQ 6) UDW 0 &RQWHPSRUDU\ 6HQGHQWDU\ 'HVLJQ 6WXGLR
8\JXODPDOWDUPDN 7DVDUÕP 'HUJLVL

6RWLULV 3 0DUFK $JDLQVW $JDPEHQ ,V D 'HPRFUDWLF
FULWLFDOOHJDOWKLQNLQJ FRP DJDLQVW DJDPEHQ LV D C

6RWLULV 3 7KLQNLQJ %H\RQG WKH /RFNGRZQ 2Q WKH 3RV
t

6\OYLD ,9 - 7KH %LRSROLWLFV RI 6RFLDO 'LVWDQFLQJ 6R

7RVFDQR $ 7KH 6WDWH RI WKH 3DQGHPLF +LVWRULFDO 0D

¹VWÙQELFL $ o6WUHHW OHYHO MXVWLILFDWLRQVp 6HUYL
,VWDQEXO -RXUQDO RI 5HIXJHH 6WXGLHV

¹VÙWELFL $ .DUDGDù 6 5HIXJHH 3URWHFWLRQ LQ 7XUNH
7XUNH\ ,QWHULP 5HSRUW .RÄ 8QLYHUVLW\ ,VWDQEXO

8 WXN 2 7XQÄ &R[$ 5RPD SHRSOH RI 7XUNH\ UH ZULW
t

8]SHGHU ('DQRYD 5RXVVLQRYD 6 ³]ÄHOLN 6 *ÓNÄHQ 6
6WUXJJOH IRU 5LJKWV RI 5RPD LQ 7XUNH\ 3URPRWLQJ 5RPD 5LJK

:HDYHU 7 8UEDQ FULVLV 7KH JHQHDORJ\ RI D FRQFHSW 8

:LOOLV & 2FWREHU (FRQRPLF (IIHFWV RI WKH &29,' 3D
+HU]HJRYLQD 0ROGRYD 0RQWHQHJUR 1RUWK 0DFHGRQLD 6HUE

:ROFRFN 0 6RFLDO &RKHVLRQ ,QVWLWXWLRQV DQG *UR

<HQLJXQ 2 (UG\G Q $ *RYHUQLQJ XUEDQ GLYHUVLW\ LQ

<D O O N YH .DPXVDO 0HN¿Q OL
%DNPDN YH .DUDNÓ\ 3HU HPEH 3

&DQ %XOXED\

0DUPDUD ¹QLYHUVLWHVL <HUHO <ÓQHWLPOHU YH .H

³]HW

1HROLEHUDO NHQW SROLWLNDODU Q Q HWNLVL
.DPXVDO PHN¿QODU NDSLWDOLVW \DNOD PODU
LQVDQODU Q NXOODQDELOHFHùL DODQODU D]D
HWNLOHQHQ JUXS LVH \D O LQVDQODUG U <D
DUW JÓVWHUPL WLU %X GXUXP RQODU Q ND
VHEHS ROPX WXU &29,' SDQGHPLVL GH \D O
ELÄLPGH JÓUÙOPHVLQL VDùODP W U .DUDNÓ\
LQVDQODU Q NROD\O NOD HUL HELOGLùL YH LO
\HU HWPL WLU $QFDN EX DODQGD \DN Q GÓQH
DODQOD LOL NLVLQLQ NHVLOPHVLQH VHEHS RO
PHN¿Q LOL NLVL LUGHOHQPL WLU 'HYDP QGD \
WHVSLW HGLOHQ .DUDNÓ\ 3HU HPEH 3D]DU pQG
DQOD OPDV LÄLQ \D O LQVDQODUOD JÓUÙ PH
%X ÄDO PD LOH \D O LQVDQODU Q NDPXVDO P
ÄHNPHVL DPDÄODQP W U

$QDKWDU .HOLPHOHU .DPXVDO PHN¿Q <D O O

/RRNLQJ DW WKH 5HODWLRQVKL
6SDFH IURP WKH 3DQGHPLF 3HUL
&RDVW RI .DUDNÓ\ 3HU HPEH 3D]

$EVWUDFW

7KH LPSDFW RI QHROLEHUDO XUEDQ SROLFLHV
DUH VKDSHG E\ FDSLWDOLVW DSSURDFKHV DQG
FLWLHV DUH GHFUHDVLQJ 7KH JURXS WKDW LV
HOGHUO\ SHRSOH 'LVFULPLQDWLRQ DJDLQVW H
VLWXDWLRQ PDGH LW GLIILFXOW IRU WKHP WR
KDV DOVR PDGH LW SRVVLEOH WR VHH WKH GLI
7KH VHDVLGH SDUW RI WKH .DUDNÓ\ 3HU HPEH
D SXEOLF VSDFH WKDW HOGHUO\ SHRSOH FDQ H
UHFHQW GHVLJQ LQ WKLV DUHD KDV FDXVHG WK
WKLV VWXG\ ILUVWO\ WKH UHODWLRQVKLS EHW
6XEVHTXHQWO\ WKH WUDQVIRUPDWLRQ LQ .DU
D ORVV RI SXEOLF VSDFH IRU WKH HOGHUO\ ZD
SHRSOH IRU D EHWWHU XQGHUVWDQGLQJ RI WK
WKLV VWXG\ LW LV DLPHG WR GUDZ DWWHQWLL
SXEOLF VSDFHV

.H\ZRUGV 3XEOLF VSDFH 2OG DJH $JLQJ 3XE

*LUL

.DPXVDO PHN¿Q EDùODP QGD GÙQ\D JHQHOLQG
%XQD EDùO RODUDN 7ÙUNL\HpGH GH YDWDQGI
NXUXPODU Q KDVVDVL\HWOHUL HVNL\H JÓUH
PHN¿QODU Q Q Ó]HOOH WLULOPHVL YH EHOOL J
HùLOLP JÙÄOHQPL GROD\ V \OD NXOODQ F D
NHQW PHN¿QODU Q Q YDUO ù NHQWOHU DÄ V
NDRWLN \DS V QGDQ X]DN YH KHUKDQJL ELU HI
PHN¿QODU VD\ FD D]DOP N V WO VD\ GD GD
PHN¿QODUD \ÓQHOLN LOJL LVH DUW JÓVWHUP

VWDQEXO JLEL PHN¿QVDO DÄ GDQ V N N NHQ
NDPXVDO PHN¿QODU YDWDQGD ODU Q WDOHSC
VRQXFXQGD V NO NOD GHùL LPH XùUDPDNWDG U
PHN¿QODUD GDLU LKWL\DÄ YH WDOHSOHUL ÓUW
\ÓQHOLN \DNOD P YH X\JXODPDODU VRQXFXQ
Ä NPDV QD QHGHQ ROPDNWDG U

*ÙQÙPÙ]GH WRSOXPXQ EÙWÙQ NHVLPOHUL LÄLÇ
NXOODQ P]RU ELU K¿O DOP NHQ \D O LQVDÇ
XOD P W U .HQW PHN¿QODU QHROLEHUDO NDS
QÙIXVD JÓUH SODQODQ UNHQ NDPXVDO PHN¿QÇ
<HQL QHVLO RODUDN DGODQG U ODQ YH FDQO
ÓQ SODQGD ROGXùX PRGD PHN¿QODU Q KHGHI
LQVDQODU VÓ] NRQXVX PHN¿QODU NDU V QGI
KLVVHWPHNWHGLUOHU %X JUXEXQ GDKD UDKD
GÓQÙ WÙUÙFÙ HWNLVLQGHQ X]DN NDODELOPL
.HQW PHN¿QODU Q Q VHÄNLQOH WLULOGLùL GI
PHN¿QODU Q LVH EHOOL JUXSODUD \ÓQHOLN W
\D O LQVDQODU Q VRV\DO KD\DWD WXWXQPDOD

<D O O ù YH \D ODQPD\ LQFHOH\HQ ELOLP GD
LUGHOHQHQ ELU ROJX ROVD GD SUDWLNWHNL H
EX QRNWDGD RUWD\D Ä NP YH \D O O ùD GDL
ELU GXUX RUWD\D NR\XOPDV Q VDùODP W U
VRV\DO \DNOD PODU EDU QG UDQ ÄDO PDODU
ÄH LWOLOLN \D O LQVDQODU Q NDPXVDO PHN¿
\DUDWPDNWDQ YH EX PHN¿QODU Q VDùOD\ F V
X]DN NDOP W U

\ O QGD WÙP GÙQ\D\ FLGGL ELÄLPGH HWNLVI
WDUW PDODUD KDUHNHW ND]DQG UP \D O L
HWNL \DUDWP RQODU Q PHYFXW VRUXQODU Q
LQVDQODU Q DIHWOHUGHQ VDOJ QODUGDQ \R
ELULQFLO GÙ]H\GH YH Dù U HWNLOHQHQ JUXSO
DÄ NÄD JÓUÙOPÙ WÙU %X EDùODPGD \D O LQVI
qJHUL ÄHNLOPHr HNOLQGH LIDGH HGLOHQ GXUX
JHUHNOHULQH X\JXQ ELU \D DP VÙUPHOHUL DFL
'ÙQ\D 6DùO N ³UJÙWÙ :+2 WDUDI QGDQ \ÙUÙWÙ
JÙQH DUWPDNWD\NHQ D\Q]DaglsmGLE\ND\DDPOPF
GD HWNLVLQL DUWW UP \D O ODUD \ÓQHOLN \
VHYL\H\H XOD P W U %XQXQ \DQ V UD \D O O I
GXUXP RODUDN JÓ]ÙNPHNWH EX GD HNVLN ELU

VWDQEXOpXQ .DUDNÓ\ VHPWLQGH \HU DODQ 3H
GÓQÙ ÙP YDWDQGD ODU Q NDPXVDO PHN¿QODU
RUWD\D NR\PDV YH \D O LQVDQODU Q NDPXVDO
EDN P QGDQ X\JXQ ELU ÓUQHN RODUDN RUWD\D
\DS ODQ GÙ]HQOHPHOHU NXOODQ P DÄ V QGDQ
LQVDQODU Q EX PHN¿Q LOH LOL NLVLQLQ NHVI
3D]DU VDKLOLQLQ JHÄPL GÓQHPOHUGHNL NXO
JÓUÙOÙ\RU ROX X JÙQÙPÙ]GHNL NXODQ POD
YH ED WD \D O LQVDQODU ROPDN Ù]HUH ELUÄR
KX]XUOX ELU NHQW \D DP VÙUPHVL DÄ V QGDQ

%X ÄDO PDGD .DUDNÓ\ 3HU HPEH 3D]DU VDK
ELÄLPOHULQH GHùLQLOPL GHYDP QGD PHN¿C
LUGHOHQPL WLU 6Ó] NRQXVX EÓOJHGH
JÓ]OHPOHU QHWLFHVLQGH \D O LQVDQODU Q
RODUDN EHOLUOHQPL WLU <D O LQVDQODU Q
YH \RùXQOXùX \DQV W OP VRQUDNL \ OODUGI
NXUJXVXQXQ \D O LQVDQODU EÙWÙQÙ\OH G O
GHùL HQ VWDQEXO %Ù\ÙN HKLU %HOHGL\HVL \C
DODQ SURMH \DU PDV QD GHùLQLOPL \DS ODF
ELU \DNOD P X\JXODQPDV QD \ÓQHOLN ÓQHULC
DUDV QGD ÄHNLOPL IRWRùUDßDU YH \DU \DS C
ù QGD HOGH HGLOHQ YHULOHU H OLùLQGH G
D DPODU GDKD VDùO NO ELU ELÄLPGH HOH DC
JHURQWRORML WHPHOOL DODQ\D] Q GHWD\O RC
JHÄPL L YH EXJÙQÙ DUDV QGDNL \D O LQVDQO

PHN¿Q GÙ]HQOHPHOHULQGH JÓ] ÓQÙQGH EXC
ÄHNLOPL VRQUDNL X\JXODPDODUGD \D O LQV
EHQLPVHQPHVLQH NDWN VDùODQPD\D ÄDO OP

.DYUDPVDO ¤HUÄHYH

%X EÓOÙPGH PDNDOH\H WHPHO ROX WXUDQ LN
GHULQOHPHVLQH LUGHOHQPL DODQ\D] QGDNL
GHùLQLOPL WLU 6RQUDNL EÓOÙPGH LOL NLOH
YXUJXODQPDV QD YH VHÄLOHQ YDND ÓUQHùL Ó
ÄDO OP W U

.DPXVDO 0HN¿QODU

0DNDOHGH RGDùD DO QDQ LNL ROJXGDQ ELUL R
IDUNO NXOODQ P DPDÄODU YH\D X\X PD]O NO
NDYUDP LOH NHQWOHUGH NDPXQXQ VHUEHVW

.DPXVDO 0HN¿Q .DPXVDO $ODQ .DUPD DV

*HUHN NDPXVDO PHN¿Q NDYUDP Q Q LÄHULùLQH
GH D\Q DQODPODU Q IDUNO NDYUDP NXOODQ
DÄ GDQ GLNNDWOL ELU HNLOGH ED ODQPDV J
RODUDN NDPXVDO PHN¿Q YH NDPXVDO DODQ N
\DQV PDODU QD GHùLQLOPL WLU

+DEHUPDVp Q oNDPXp YH oNDPXVDOp NHOLPHO
RODQ NDPXVDO PHN¿QODU Q LÄHUGLùL DQODP
+DEHUPDVpD JÓUH EX LNL NHOLPHQLQ JÙ
X\X PD\DQ ÄH LWOL DQODPODU YDUG U YH ID
DQODPODU EXODQ N ELU LOL NL LÄHULVLQGHG
EÙURNUDVLOHULQ YH NLWOH LOHWL LP DUDÄO
NXOODQ PODUGD GHùLO ED WD KXNXN VL\DVH
GD JÓUÙOGÙùÙQÙ YH JHOHQHNVHOOH PL oND
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KDON Q WRSODQG ù IL]LNVHO \HUOHU SROW
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\ÓQÙQGH ELU Ä NDU P \DS ODELOHFHùLQL LIDGH

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DÄ GDQ IDUNO GRNWULQOHU YH WRSOXPVDO
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JHQHOOLNOH YH EÙ\ÙN RUDQGD UHVPL GÙ]H\GI
PLQYDOGH NXUJXODQDQ ELU NDPXVDO DODQ LN
JHQL OHWLOPHVL EDùODP QGD WDULI HGLOHQ
EÙQ\HVLQGHNL DQODP ÄH LWOLOLùL QHGHQL\O
HQHUpLQ GHYOHWLQ HJHPHQOLùL LOH SD
DODQpD DOWHUQDWLI RDUDN KDON Q HJHPHQ
EDùODPGD ÓQHPOL ROXS NDPX NHOLPHVLQGHQ
RUWD\D NR\PDNWDG U

.DPX NHOLPHVLQLQ 7ÙUN 'LO .XUXPX 85/ VÓ]C
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NDPX NHOLPHVL V UD\OD KDON KL]PHWL JÓUHQ
EÙWÙQÙ KDON DPPH KHS EÙWÙQ RODUDN ÙÄ
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WD UODU %XQXQ \DQ V UD NHQWL GÓQÙ WÙU
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NDU OD PD \HULGLU YH NDU O NO LOL NLOHU
*ÓNJÙU

*HÄPL WHQ *ÙQÙPÙ]H .DPXVDO 0HN¿QODU

.DPXVDO PHN¿Q GHQLOGLùLQGH DNOD LON RO
DJRUDODU VWRDODU IRUXPODU WL\DWURDU
EDù PV]O ù Q Q VLPJHVL WLFDUHWLQ \DS OG

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XOD POD EDùODQW O DODQODU YH SDUN SDV
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ROX WXùXQX ELQDODU WDUDI QGDQ V Q UODQ
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<D O O N

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*HURQWRORML

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ELOLP NHOLPHOHULQLQ ELUOH PHVL\OH PH\G
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DUWP \D O O N ROJXVXQXQ HNRQRPL SROLW
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$JHLVP

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EDU QG UPDNWDG U .XUWNDSDQ 'DQ Y
WRSOXPGD \D D\U PF O ù Q Q WH YLN HGLOLS
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LÄLQGH ROPDODU \D O ODUD VXQXODQ HùLWL
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0DNDOHGH \D O ODU Q NDPXVDO PHN¿QODUOD
GÙ ÙQÙOHQ NXUDPODUD \HU YHULOPL WLU

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LOHUOH\HQ \D \OD ELUOLNWH IL]LNVHO VRV\L

\D O NL LOHULQ D]DODQ HWNLQOLNOHULQL YH
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ROX WXUGXùX \D DP WDU] QGDNL LVWLNUDU N
\D ODQG NÄD WXWDUO ELU GDYUDQ ÓUÙQWÙV
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%LUH\H RGDNODQPDV QHGHQL\OH GH \D ODQPD
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NXUDP LVGH JHUL ÄHNLOPH NXUDP QD NDU WO
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\D DP HYUHOHULQH EHQ]HU VWDWÙ URO YH GD
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.XUDPGD EHN¿UO N YH HPHNOLOLN JLEL URO N
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7ÙUNL\HpGH YH 'ÙQ\DGD <D O O N ¤DO PD

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UHVPË ÄDO PD \DS OP W U 'HYOHWOHU VLYL
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\ O QGD 'HYOHW 3ODQODPD 7H NLODW WDUD
YH <D ODQPD 8OXVDO (\OHP 3ODQ r \ O QGD
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$LOH YH 6RS\DO 3ROLWLNDODU WDUDI QGDQ
+L]PHWOHU .XUXPVDO <D O %DN P YH .XUXPV
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LÄLQ VDùO N NDW O P JÙYHQOLN LPN¿QODU Q
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<D O O N YH .DPXVDO 0HN¿Q OL NLVL

ON NH] pO \ OODU Q VRQXQGD 'ÙQ\D 6DùO
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JHOPL WLU

7LOpH JÓUH RUWDODPD KDQHKDON EÙ\ÙN
VD\J Q ELU \HUH VDKLS RODQ \D O ELUH\OHULQ
VHEHS ROPDNWDG U YH LWLEDU HGLOHQ VD\J
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SR]LWLI DOJ GD \D O ODUD VD\J GHQH\LPOHU
DOJ GD LVH HNRQRPL\H \ÙN ROPD ÓùUHQPH ND
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ND\E HQJHOOOLN KDVWDO N GXO NDOPD JL
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JÓWÙUPH SRWDQVL\HO RODQ ELU ROXPVX]OX
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EX DÄ GDQ ÓQHPOLGLU ³\OH NL EX ND\J YH JÙ
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PHWUH X]XQOXùXQGDNL KDWW U 5HVLP

5HVLP .DUDNÓ\ 3HU HPEH 3D]DU 6DKLOL .D\QDN *RRJOH (DUWK

3HU HPEH 3D]DU \\pGD EDO NÄ ODU K¿O D ROGXùX ELU OLPDQ DODQ ROXS N \ GD EXJÙQ \DS ODU PHYFXWWXU 5HVLP

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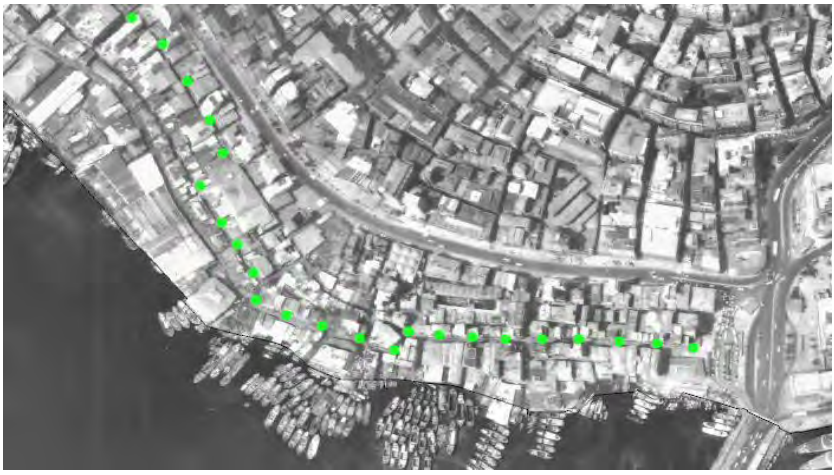

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QDOEXUODU WRUQDF ODU YV LVH YDUO NODU Q

5HVLP .DUDNÓ\ 3HU HPEH 3D]DU 6DKLOL
.D\QDN *RRJOH (DUWK

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NHVHFHN ELÄLPGH NXUJXODQDQ PHWUR JHÄL L
LQ DDW Q Q ED ODPDV \OD ELUOLNWH \H LO DC
VV]OD PDV VÓ] NRQXVX ROPX WXU 5HVLP
\HQLOHPH DODQ LODQ HGLOPL WLU

5HVLP .DUDNÓ\ 3HU HPEH 3D]DU 6DKLOL .D\QDN *RRJOH (DUWK

\ O QGDQ VRQUD VDKLO HULGLQLQ 0DNEXO NDODQ PHWUHOLN N VP QGD 5HVLP \D YDUO NODU \ O QD NDGDU VÙUGÙUPÙ OHUG

5HVLP .DUDNÓ\ 3HU HPEH 3D]DU 6DKLOL .D\QDN *RRJOH (DUWK

.HQWLQ WDULKË PHUNH]OHULQGH EHQ]HUOHUL EDKÄHOHULQGH GÓUW PHYVLP ER\XQFD JÙQÙ JÓUÙOPÙ EX DODQ \ OODU ER\XQFD EÙ\ÙN NDPXQXQ EÙ\ÙN N VP Q Q KHUKDQJL ELU HQJH VDKLOGH ELUNDÄ DGHW ÄD\ EDKÄHVL Ó]HOLN DU] HWPL WLU 5HVLP

5HVLP .DUDNÓ\ 3HU HPEH 3D]DU 6DKLOL
.D\QDN <D]DU $U LYL

*HOLU GÙ]H\L GÙ ÙN NHVLPOHULQ UDKDWO NOD
LPN¿QODU JHQL VDNLQ DPD D\Q]DPDQGD FD
ELUOH LN PHYVLP DNWLI ELU NDPXVDO PHN¿
WDULKLQGH UHVPË PDNDPODUFD IL]LNVHO RODU
PDNLQHOHUL\OH ELUÄRN DùDÄ SDUÄDODQP
DODQ ÄLWOHQHUHN LQVDQODUD NDSDW OP W U

5HVLP .DUDNÓ\ 3HU HPEH 3D]DU 6DKLOL
.D\QDN <D]DU $U LYL

< N P L OHPLQLQ DUG QGDQ N VD ELU VÙUH DW
DODQGD \ O QGD ÄH LWOL GÙ]HQOHPHOHU
L OHYL JHÄPL H RUDQOD EÙ\ÙN ÓOÄÙGH GHùL V

5HVLP .DUDNÓ\ 3HU HPEH 3D]DU 6DKLOL
.D\QDN NRQNXU LVWDQEXO

<DS ODQ \HQL GÙ]HQOHPHGH KHUKDQJL ELU WI
RODUDN NDPX\D VXQXOPDV JHÄPL WHNL XFX
ROXPOXOXN DU] HWPL WLU 2OXPVX]OXNODU R
DODQGDNL DùDÄ EXQD EDùO RODUDN GD JÓO
LQVDQODU Q NXOODQ P QD X\JXQ L OHYOHU Y
GHùLO JHÄLOLS JLGLOHQ ELU PHN¿Q \DUDW OP
WHQKD ROPDV NXOODQ ODQ DK DS PDO]HPHO
SDUÄDODQP ROPDV JÙYHQOLN HNVLNOLùL Q

\ O QGD GHùL HQ VWDQEXO %Ù\ÙN HKLU %I
DODQ GD NDSVD\DFDN HNLOGH q+DOLÄ . \ ODU
\ O LÄHULVLQGH VRQXÄODQG UP W U %XQD J
ROXS IDDOL\HWOHU PDNDOHQLQ \D] OG ù WDU

$UD W UPDQ Q <ÓQWHPL YH 1LWHO $UD W UP

¤DO PD VÙUHVLQFH YDU ODQ NDQ ODU YH \DS
ROGXùXQXQ RUWD\D Ä NDU OPDV Q Q DPDÄOD
NXUJXODQP W U %X EDùODPGD JHÄPL WH .DU
EDKÄHOHULQGHNL GXUXPD WDQ NO N HWPL NI
QLWHOLNOHU DU] HGHQ NDPXVDO PHN¿QODU V

DUDV QGD GHùL HQ NL L\OH \DU \DS ODQG U
ELUH ELU JÓUÙ PHOHU \DS OP W U 0ÙODNDWC
NDW O PF ODUGDQ PDNVLPXP YHUL HOGH HGL
RGDù QGD \HU DODQ PHN¿QD EHQ]HU PHN¿QOD
ÓQÙQGH EXOXQGXUXODUDN VRV\DO PHVDIH NXU

³UQHNOHPLQ EHOLUOHQPHVLQGH DPDÄVDO ÓU
X\JXQ JÓUÙOPÙ WÙU <D O LQVDQODU Q NDPX
ILNUL QHGHQL\OH ELU \DQO O N GD LÄHUHQ ÓU
LQVDQODU Q ÄDO PD\DQ YH GRùDO RODUDN YDN
ROPDV QD GLNNDW HGLOPL WLU %XQXQ \DQ V
VWDQEXOpXQ ELUELUOHULQH] WO N DU] HGH
)DWLK .DG NÓ\ %DùF ODU YH %DN UNÓ\ LOÄH
VHÄLOPL WLU ³UQHNOHPLQ DUD W UPD HYUHQL
DUD W UPDQ Q NRQXVXQD GDLU WHFUÙEH YH JÓ
KDUHNHWOH PÙODNDWODU ÓQFHVL N VD GL\DO
RQD\ DO QP W U

<DS ODQ WÙP JÓUÙ PHOHU NDW O PF ODU Q RQ
*ÓUÙ PHOHULQ ÄÓ]ÙPOHUL \DS OG NWDQ VRQU
WDVQLI HGLOPL YH VDKDGD ÓQFHVLQGH .DU
VWDQEXOpXQ ÄH LWOL \HUOHULQGHNL NDPXVD
HGLOHQ YHULOHU LOH ELUOH WLULOHUHN EXOJ

*ÓUÙ PHOHU ÓQFHVLQGH NDW O PF ODUD .DUD
L OHYLQGH \DS ODQ JÓ]OHPOHU DNWDU OP GÓ
PHN¿Q Q \D O LQVDQODU DÄ V QGDQ ELU ND\ S
NDPXVDO PHN¿QODU QGD QH WÙU]RUOXNODU \D

<DS ODQ JÓUÙ PHOHUGH ÓQFHOLNOL RODUDN W
\D DP VÙUHELOPHN PDNVDG \OD NDPXVDO PHN¿
EDùODQPD ÄDEDV QGD ROGXNODU JÓUÙOPÙ
NDSVD\ F O ùD VDKLS ROGXùX WHVSLW HGLOPL

7RSOXPGD YH VRV\DO ELOLPOHU GÙQ\DV QGD
NRQXVXQGD ELU X]OD ROPDG ù DÄ NW U .DP
VDKD\D WDVDU P YH X\JXODPD RODUDN \DQV UN
GXUXP NXOODQ F JUXSODU Q Q WDOHEL\OH KH
3D]DU ÓUQHùLQGH JÓUÙOHQ L OHY GHùL LNOLù
ÓQFHGHQ XFX]D ÄD\ NDKYH LÄPH RODQDù YDU
WÙPÙ\OH ÙFUHWVL] RODUDN NDPX\D VXQXOPX V

ELU DYDQWDM \DUDWPDG ù JLEL GH]DYDQWDM
\DOQ]FD ELU EDQNWD KLÄELU H\ KDUFDPDGDC
WHN VHÄHQHùLQ EX ROPDPDV JHUHNWLùLQL F
HNLOGH YH JHOHQHNVHO LÄHFHNOHUL WÙNHW
.DPXVDO PHN¿Q Q \DOQ]FD ÙFUHWVL] ROPDV
QHGHQOH HNVLN YH VDNDW ELU \DNOD P RODU

<D O LQVDQODU Q HY G QGD YDNLW JHÄLUHE
\ OODUGD JLGHUHN ÄHKUH GHùL WLUPHOHUL
EX GXUXP JÓUÙ PHOHUGH LND\HW NRQXVX RC
GÙ ÙQGÙNOHUL PHN¿Q NDIH ÄD\ EDKÄHVL
GÙ ÙQPHNWHGLUOHU 9DNLW JHÄLUHFHNOHUL F
ÓQH Ä NDU OPDNWD RUWDP Q Q YH L OH\L LQL
GLOLQ YH ÙUÙQOHULQ IL\DWODU Q Q LQFHOHQH
EH\DQ HWPHNWHGLUOHU

%XQXQ \DQ V UD \DOQ]FD NHQGL \D JUXSODU
EXOXQPDPD LVWHHùL GH ÓQH Ä NDQ JÓUÙ OHU
WRSOXPGDQ L]ROH RODUDN EHOOL PHN¿QODUG
LÄH RODUDN KD\DW Q DN QGD \HU DOPDN ROG

$LGL\HW GX\JXVX GD \D O LQVDQODU Q NDPX
KDVVDVL\HWOHULQGHQ ELUL RODUDN RUWD\D
JÓUHYOLOHU WDUDI QGDQ WDQ QPDN YH VD\J
EH\DQODU QD JÓUH KHU GDLP LKWL\DÄ GX\GXN
D\U FDO NW U

7RSOXPGD V N JÓUÙOHQ K UV]O N JDVS JLEL R
LIDGH HWWLNOHUL ELU ED O N RODUDN ÓQ SOD
LQVDQODUGDQ WHGLUJLQ ROGXNODU Q VWUK
V Q UODU EHOOL YH EÙQ\HVLQGH ÄDO DQODU
JÙYHQOLN DÄ V QGDQ GDKD UDKDW KLVVHWWLU

+DYD DUWODU GD JÓUÙ PHOHUGH V NÄD GHùL
PHN¿QODU \ O Q ELUÄRN D\ QGD VRùXN KDYDC
VHEHEL\OH NXOODQDPDG NODU Q EHOLUWPL O
RODQ XFX] FDIH YH ÄD\ EDKÄHOHULQGH YDNLW

.DPXVDO PHN¿QODUGD YDNLW JHÄLUPHN LÄLQ E
JLEL DUWODU ROPDG ù Q ED]HQ \DOQ]FD WH
KD\DW Q DN Q Q LÄLQGH \HU DOPDN PXKLWO
YH KDEHUGDU ROPDN DPDF \OD NDPXVDO PHN
ED O NODUGDQ ELULGLU

*ÓUÙ PHOHUGH RUWD\D Ä NDQ ÓQHPOL ELU GX
\ O LÄHULVLQGH NHQWWHNL ÓQHPOL NDPXV
\ÙUUÙWPHN DPDF \OD NDW O PF YH GHPRNUDW
\DU PD R\ODPD X\JXODPDODU G U %X VÙUHFH
NDW O S NDW OPDG NODU NDW O PF ODUD VRUX
DQFDN LQWHUQHWL SURMHOHUL LQFHOH\HFHN Y
ÓWÙUÙ R\ODPDODUD NDW OPDG NODU JÓUÙOP
RODQ \D O LQVDQODU Q LKWL\DÄODU Q WRSO
V N QW ODU NDQ WODU QLWHOLNWH ELU GXUXP

*ÓUÙ PHOHULQ \DS OG ù]DPDQODUGD KD\DW
SDQGHPLVL GH NDW O PF ODU Q EDKVHWWLùL V
3DQGHPLQLQ 0DUW D\ QGDQ LWLEDUHN 7ÙU
\D O LQVDQODUD \ÓQHOLN EDVN JÓ]OH JÓUÙ
\DVDNODPDGD ÓQFH \D O LQVDQODUGDQ IHGD
VDùO ù LÄLQ ROGXùX DOJ V LOH ELUOLNWH Ù
ID]OD DUWP W U %DQNODU Q WRSODW OPDV
WRSOX WD PD DUDÄODU QD ELQPHQLQ \DVDNO
YH UXKVDO VDùO ù Q GHULQGHQ HWNLOHPL WI
ELU DQODPGD NDSDQD N V OP ROGXNODU Q
EX GXUXPXQ HWNLVLQL NDW NDW ID]OD KLVVHW
DODQODU Q Q FDPL DYOXODU QGDNL EDQNODU
X\JXODPDODU Q RQODU HYH PDKNØP HWWLùLQ
GLOH JHWLUPL OHUGLU 5HVPË PDNDPODU QH]G
DODND ÓQH Ä NPDNWD DQFDN EX GXUXP RQODU
DU] HWPHNWHGLU %X GD PDNDOHQLQ LON EÓO
HJHPHQOLùLQL VRV\RRMLN \DNOD P Q HNVLN

6RQXÄ YH ³QHULOHU

QVDQ ED ND LQVDQODUOD ELUOLNWH YH RQ
ÓQHPOL EÓOÙPÙQÙ \HUOH LP EÓOJHOHULQGHNL
VRV\DO ELU YDUO NW U .HQWOHU GH LQVDQODU
NDPXVDO PHN¿QODU EDU QG UPDV JHUHNHQ
$QFDN JÙQÙPÙ] NHQWOHULQGH NDPXVDO PHN¿
ND\ SODU \D DQPDNWDG U %ÙWÙQ NXOODQ F J
NDPXVDO PHN¿QODU Ó]HOLNOH \D O LQVDQO
NDPXVDO PHN¿QODUD HUL LPL]RUOD PDNWDG U

+DUYH\p\H JÓUH HKLU KHU WÙUGHQ YH V
GHùL HQ PÙ WHUHN ELU \D DQW \ ÙUHWWLùL E
JHUÄHNOH WLùL DODQODU GD PDNDOHQLQ RGD

GRùDO JÙGÙOHULQGHQ ELUL RODQ VRV\DO \D D
GXUXP GD NDPXVDO PHN¿QODU Q RQODUD VXQ
\DN QGDQ LOL NLOLGLU 6WDYULGHVpLQ
\DS F XQVXUX LOL NLOHU NÙPHVL ROGXùX W
WH]DKÙUOHULQLQ YH ROD\ODU Q Q D\U OPD] EL
PHN¿Q LOL NLVLQL DÄ NOD\DQ LIDGHOHUGLU [3]
YH ROX WXUXOPX RODQ EX DODQODU LQVDQO
PHN¿QD GÓQÙ PÙ OHUGLU

.HQWOHUGH NDPXVDO PHN¿Q ÙUHWLPL YH WDV
ÄDW W ù ELU VDKD RODUDN NHQW JÙQGHPLQ
NL L YH NXUXPODU Q NDPXVDO PHN¿QODUD G
YH NXOODQ F JUXSODU Q Q LVWHNOHUL ÄRùX
NDPXVDO PHN¿QODUGD ÄH LWOL NXOODQ F JU
<D O LQVDQODU EX VÙUHÄWH HQ ÄRN JÓ] DUG
WRSOXPVDO JUXSODUGDQ ELULGLU

.DUDNÓ\ 3HU HPEH 3D]DU pQGD \ OODU
NDPXVDO PHN¿Q NXOODQ PODU DÄ V QGDQ \X
%X EÓOJHGHNL NDPXVDO PHN¿QODU Q UHVPË
GHùL WLULOPHVL \D O LQVDQODU Q EX DODQO
PHN¿Q ND\E VRQXFXQX \DUDWP W U

\ O QGD EÙWÙQ GÙQ\D\ HWNLVLQH DODQ
JÓUÙOPHVL\OH ELUOLNWH K¿OLKD] UGD WRSOX
DUWP W U <D O LQVDQODU Q WRSOXP QD]DU
NHQGLOHULQH NDU WXWXPODU VRUJXODQ U
PHN¿QODUD RODQ HUL LPOHUL GH EÙ\ÙN RUDQ
JUXSODUGDQ ELUL RODUDN \D O LQVDQODU EÙ

7ÙP EX VRUXQODU Q WHVSLWL VRQUDV QGD Ä
PHN¿QODUOD RODQ PHYFXW LOL NLVLQLQ GLQD
\D O LQVDQODUOD QLWHO DUD W UPD VÙUHFL
YHULOHU VDKDGD \DS ODQ JÓ]OHPOHUOH ELU
\DS ODFDN GÙ]HQOHPHOHUH YH V I UGDQ \DS O
EX EÓOÙPGH ÓQHULOHU V UDODQP W U

.DPXVDO PHN¿Q GÙ]HQOHPHOHULQGH ÓQFHOL
\ÙNVHOWHFHN WHUFLKOHU \DS OPDO G U %X
WRSOXPGDNL ELUÄRN GH]DYDQWDMO JUXED GI

EXOXQGXUXOPDO G U %X X\JXODPDODU KD\DWI
\D O JÓÄPHQ VD\ V GD DWODQPDPDO RQODU
HUL HELOPHVL VDùODQPDO G U

.DPXVDO PHN¿QODU Q KHU WÙUOÙ PHYVLP YH
GRQDW OPDV JHUHNOLOLùL \DS ODQ JÓUÙ PH
NRQXGXU *ÓOJH LKWL\DF YH EXQD EDùO ROD
V FDNO NODU Q Q \D O LQVDQODU Ù]HULQGHNL
%XQD HN RODUDN D\G QODWPD XQVXUODU RWX
ÓJHOHU XQXWXOPDPDO G U *ÙYHQOLN ROJXVX
ÄRN ÓQHPOL ELU NRQX ROGXùX JÓ]GHQ NDÄ U
KLVVHWPHOHULQL VDùOD\DFDN FDQO O NWD RU

<D O LQVDQODU \DOQ]FD NHQGLOHULQH DLW RO
KR QXW ROPDPDNWDG U 2QODU LÄLQ KD\DW Q
DN Q Q GRùUXGQ VH\UHGLOHELOHFHùL DODQ
HUL LPGH ÓQHPOL ELU NRQXGXU <D O LQVDQO
NROD\OD W U OPDO PHN¿QD HUL LP D DPDV QO

<D O LQVDQODU Q NHQWOH JÓUVHO LOL NL
YH ÄHYUHOHQPL GHùLO ÄHYUH\H JÓUVHO DÄ
NXUJXODQPDO G U ¹FUHWVL] RODUDN \DOQ]FD
YDNLW JHÄLUHELOLUOHUNHQ \D O LQVDQODU
RODELOHFHNOHUL NDPXVDO PHN¿QODUD LKWL\
\DOQ]FD ÙFUHWVL] RODUDN NXOODQ OPDV JH
RODELOGLùL JÓ] ÓQÙQGH EXOXQGXUXOPDO G U

<D O LQVDQODU LÄHULVLQGH NDG QODU Q HUN
GDKD D]]DPDQ JHÄLUGLNOHUL JÓUÙOPÙ WÙU
NR\GXùX Ù]HUH \D O NDG QODU Q NDPXVDO P
EXOXQPDNWDG U %X QHGHQOH \D O NDG QOD
PHN¿QODUGDNL JÓUÙQÙUOÙùÙQÙQ DUWW U OPD
KDNODU Q Q H LW GDù O P DÄ V QGDQ HO]HPGL

.DPXVDO PHN¿Q WDVDU PODU QGD WRSOXPVD
JHUHNWLùL NDGDU EX DODQODU Q NHQWOHUOH
HVWHWLùLQH D\N U X\JXODPDODUGDQ NDÄ Q
D DPDV QGD LOJLOL DODQODU Q JHÄPL NXOODQ
SUDWLNOHUOH SURMH JHOL WLUPHVL VRV\ROR
HWPHOHUL JHUHNPHNWHGLU <D O LQVDQODU
VRUXQ WH NLO HWPH\HFHN ELU GÙ]H\GH WXWP
VDùODQPDV \OD PÙPNÙQGÙU

.D\QDNODU

'DFKHX[¦ .DPXVDO $ODQ +ÙVH\LQ .ÓVH ¤HY VW

'DQ 0 = (IH) $NWLI <D ODQPD 9HOLWWLQ .DO Q
¤Ó]ÙPOHU LÄLQGH V

'HPL U 6HVOL 0 .DPXVDO $ODQ 7ÙUNL\HpGH .
7HNWLSOLOLN PL ¤RùXOFXOXN PX" 6RV\DO %LOLPOHU $

'XEHQ $ 7RSOXP YH $LOH 2GDù QGD <D ODQPD YH
0HNDQGD $GDOHW YH <D O O N LÄLQGH VWDQEXO

(UGHP 6 <DYX] & <D O 'RVWOX .HQWOHU 'HQ] 6
%XUVD (NLQ

(UGÓQPH] (.DPXVDO $ODQ YH 7RSOXP VWDQEXO
<D\ QODU

*ÓNJÙU 3 .HQWVHO 0HN¿QGD .DPXVDO $ODQ Q <HU

*ÙOWHNLQ 7 *HURQWRORMLQLQ 'RùX X YH *HOL LP
%XUVD (NLQ

*ÙUDOODU 1 .DPX .DPXVDO $ODQ .DPX <DS ODU
ÄLQ %LU 7HUPLQRORML 7DUW PDV 0LPDUO N

+DEHUPDV - .DPXVDOO ù Q <DS VDO 'ÓQÙ ÙPÙ 7DQ

+DUYH\ ' $VL HKLUOHU $\ H 'HQ] 7HPL] ¤HY V

.RFDED\ HQHU 1 %LU 0ÙFDGHOH $ODQ 2ODUDN .H

.RUNPD] 1 <D] F 6 *LUL .ÙUHVHOOH PH YH <D
'HU .ÙUHVHOOH PH YH <D O O N (OH WLUHO *HURQWRO

.XUWNDSDQ + .HQWWH <D O O N YH <HUHO <ÓQHWL

3HNFDQ + <D O O N (UNDQ *ÓQÙO 9HGDW , NKD
$UPDùDQ LÄLQGH V $QNDUD +DFHWWHSH ¹QLYHU

6DOXU * <D O O N YH %LOL VHO 6ÙUHÄOHU $ODQ '
$Ä ODU LÄLQGH V VWDQEXO %LOJL ¹QLYHUVLWHV

6WDYULGHV 6 0Ù WHUHN 0HN¿Q 0Ù WHUHNOHU 2O

HQWÙUN 0 6RQXÄ YH 7DUW PD %LU <D DP $ODQ
YH +DUXQ &H\ODQ (G VWDQEXOpGD <D ODQPDN LÄLQG

HQWÙUN ¹ <D O O N 6RV\RORMLVL <D O O ù Q 7RS

7D Ä + %LU +D\DW 7DU] 2ODUDN HKLU 0HN¿Q 0H

7HNLQ $ <D O O ùD OL NLQ 6RV\RORMLN <DNOD PC
%XUVD (NLQ

7LO $ 1ÙIXV <D ODQPDV YH 7RSOXPVDO %R\XWODU
V %XUVD (NLQ

7XIDQ 7ÙUNL\HpGH <D O O ù Q <DS VDO 'HùL LPL

7XUJXW 6 .HQWOHULQ 6LQHUML .DSODU .DPXVDO
$\QXU $WPDFD &DQ (G .DPXVDO $ODQ 2NXPDODU (VHQ
HKLU 'Ù ÙQFH 0HUNH]L HKLU <D\ QODU

85/ KWWSV VR]OXN JRY WU

85/ KWWS ZZZ PLPDUOLNGHUJLVL FRP LQGH[FIP"VD\ID I

<D] F 6 *HURQWRORML YH *HOL LP 6ÙUHFL 1LOÙII
<D O O N (OH WLUHO *HURQWRORML\H *LUL LÄLQGH V

&29,' 3DQGHPLVLQLQ <DUDWW .DU V QGD .HQWOLOHULQ 3ODQ .DW OPD VWHNOLOLùL]PLU .D *UXSODU ¹]HULQH %LU 'HQH\LP

'U ³ùU ¹\HVL *Ó]GH (N LRùOX ¤HWLQWDKUD

'RNX] (\OÙO ¹QLYHUVLWHVL 0LPDUO N)DNÙOWHVL

'U 6HQHP 7H]FDQ

'RNX] (\OÙO ¹QLYHUVLWHVL)HQ %LOLPOHUL (QVWL\

%HGUL\H ¤ QDU

'RNX] (\OÙO ¹QLYHUVLWHVL)HQ %LOLPOHUL (QVWL\

³]HW

\ O Q Q $UDO N D\ QGD :XKDQ ¤LQ NHQWL 6DùO N ³UJÙWÙ '6³ WDUDI QGDQ GÙQ\D JHQHO LODQ HGLOPL WLU 'DPODF N \ROX\OD EXOD DQ ELU GL]L ÓQOHP DOPD\D ED ODP W U %X GRù JLEL ELOJLOHQGLUPHHU PDVNH WDNPD YH PH \XUGD JLUL OHUGH NDUDQWLQDODU VRNDùD Ä L \HUOHULQLQ JHÄLFL RODUDN NDSDW OPDV ÄHUÄHYHGH GÙ]HQOHPHOHU \DS OP W U 6ÙUH ÓOÄHNOL PÙGDKDOHOHU ROPX WXU <D DQDQ E \D DP DODQODU QD HQWHJUH ROPDV QGD NDUD 7¹% 7$. GD EX GRùUXOWXGD WRSOXPVDO ÄÓ]ÙP Ä NP W U %X SURMHOHUGHQ ELU WDQHVLQGH NHQWVHO DODQ Q JHOHFHùLQH YH NXOODQ P D NDW OPD GXUXPODU QD \ÓQHOLN ELU DUD W UP

$QDKWDU .HOLPHOHU &RYLG 0DKDOOH 3ODQ

%X ÄDO PD 7¹% 7$. WDUDI QGDQ GHVWHNOHQHQ . QROX q& ¤ NDPD\DQ ¤RFXNODU Q YH (EHYH\QOHULQLQ .HQWVHO 0HNDQD ¤RFXNODU Q)L]LNVHO $NWLYLWH 'Ù]H\OHULQH 2ODV (WNLVLr ED)HQ YH 0ÙKHQGLVOLN %LOLPOHUL $UD W UPD YH <D\ Q (WLùL .XU

3DUWLFLSDWLRQ :LOOLQJQHVV R 3URFHVV DJDLQVW 6RFLDO DQG &29,' 3DQGHPLF $Q ([SHULHQ (FRQRPLF *URXSV LQ]PLU .DU

$EVWUDFW

7KH &RYLG YLUXV ZKLFK DSSHDUHG LQ :XKDQ DV D SDQGHPLF E\ WKH :RUOG +HDOWK 2UJDQL &RXQWULHV KDYH VWDUWHG WR WDNH D VHULH RI WKH YLUXV WUDQVPLWWHG WKURXJK GURSO ZDV PDGH VXFK DV LQIRUPLQJ VXFK DV UXC LQ SXEOLF DUHDV OLNH ZHDULQJ PDVNV DQG G FXUIHZV WHPSRUDU\ FORVXUH RI ZRUNSODFHV HQWUDQFH DQG H[LW WKH FLW\ 7KHUH KDYH EH FRQVLGHULQJ WKH GXUDWLRQ ,Q WKLV GLUHF 5HVHDUFK &RXQFLO RI 7XUNH\ DOVR FDOOHG VROXWLRQV 7KLV VWXG\ ZKLFK LV RQH RI WKH LQ WKH IXWXUH RI DQ XUEDQ DUHD DQG LWV OD

.H\ZRUGV &RYLG 1HLJKERXUKRRG 3DUWLFL VWUXFWXUH

*LUL

\ O $UDO N D\ QGD ¤LQpLQ :XKDQ NHQWLQG
GÙQ\D JHQHOLQH \D\ OPDV QHGHQL\OH 'ÙQ\D
WDULKLQGH SDQGHPL RODUDN LODQ HGLO
ROPDV YH EX EXOD Q HQJHOOHQPHVL DG QD D
IL]LNL PHVDIH PDVNH NXOODQ P NL LVHO KLI
ÓQFHOHUL RGDNODQPDG ù NDYUDPODU JÙQGH
LOJL DODQODU QGD EXOXQPDNOD ELUOLNWH H
SODQODPDQ Q GD LOJL DODQ QD JLUHQ YH GH L
YH YH\D ROX XPODUD GÓQÙ PÙ WÙU ³\OH NL PH
JLEL NRQXODU \HUHO YH PHUNH]L \ÓQHWLPOH
X\JXODPDODU ÙUHWPHVLQH QHGHQ ROPX WXU
ED OD\DQ HYGHNDOWXUNL\H NDPSDQ\DODU J
\D DOW YH \D ÙVWÙ QÙIXV JUXSODU Q Q]R
JHQHOJHOHU Ä NDU OP YH \ÓQOHQGLUPHOHU
ÙQLYHUVLWH $90 JLEL ELUÄRN DODQ +D]LU
L \HUOHULQGH HVQHN ÄDO PD RODQDNODU V
]RUXQOXOXùX UHNUHDV\RQ YH SDUN DODQOD
PÙGDKDOHOHUOH NHQWVHO DODQGDNL VRV\DO
+D]LUDQ WDULKLQGHQ LWLEDUHQ \HQL Q
N V WODPDODU Q Q NDOG U OG ù HVQHWLO
\DNDODQDQ YDND VD\ V QGD ÓQFHNL GÓQHPH
NDUDU YHULFLOHULQ VÙUHNOL JÙQGHPLQGH
ELUOLNWH ELUÄRN NDUDU ÙUHWLOPL WLU HN
EHNOHQWLOHU N V WODPDODU Q ÓQÙPÙ]GHNL
GRùUXOWXVXQGD NHQW \D DP YH NHQWVHO GÙ
LOL NLQ NDU OD ODELOHFHN VRQXÄODU KHQÙ
GLVLSOLQ NRQX\X KHU ER\XWX\OD GHùHUOHQG
JHOL WLUPH\H ÄDO PDNWDG U

HNLO 7ÙUNL\HpGH 3DQGHPL 6ÙUHFLQGH 0HUNH]L <Ó

.DUDU 6D\ V *ÙQ

$NDGHPLN FDPLDGD SDQGHPL VÙUHFL\OH PÙFDG
YH WHGDYL JHOL WLUPH\H \ÓQHOLN ÄDO PDOD
ÄÓ]ÙP ÙUHWLOPHVL JHUHNHQ DODQODU VDùO
X]XQ VÙUPHVL VÙUHFLQ QH]DPDQ VRQD HUHFH
\D DPVDO DODQODUD HWNLOL RDFDù QGDQ SD
\ÓQHOLN ÄÓ]ÙPOHU ÙUHWLOPHVL JHUHNOLOLùL
EH HUL ELOLPOHU SHUVSHNWLLQGHQ GH VDOJ
VRUXQODUD LOL NLQ ÄÓ]ÙP ÓQHULOHULQLQ JE
JHUHNWLùLQGHQ \ROD Ä NDUDN 7¹% 7$. q&RYL
YH (NRQRPLN (WNLOHUL 6RUXQODU YH ¤Ó]ÙPO
ÄDO PD VÓ] NRQXVX ÄDùU NDSVDP QGD NDEX
6ÙUHFLQGH .RQXWODU QGDQ ¤ NDPD\DQ ¤RFXN
OL NLQ 6DùO N *ÙYHQOLùL $OJ V YH 1RUPDOC
'Ù]H\OHULQH 2ODV (WNLVLr ED O NO SURMH N
DPDÄODQDQ &29,' VRQUDV QRUPDOH GÓQGÙ
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\D DG NODU PDKDOOHOHUGH EXOXQDQ G PHND
HOGH HWPHN YH EÓ\OHFH ÄRFXN HEHYH\Q ÄL
VRQUDV KDQJL PHNDQODU NXOODQ ODELOLU
HWPHNWLU ¤DO PDQ Q NHQWVHO PHNDQD LO
LÄHUL\RU ROPDV NHQWLQ PHUNH]L YH \HUHO
%Ù\ÙN HKLU %HOHGL\HVL YH .DU \DND %HOHGL
DÄP W U ¤DO PDQ Q YHULVL SDQGHPL LOH PU
ÄRFXNODU Q HEHYH\QOHUL\OH \DS ODQ ÄHYULP
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1LVDQ t +D]LUDQ YH QRUPDOOH PH GÓQHL
]DPDQ DUDO ù QGDÄRFXNODU Q Q VDùO NODU L
JHUÄHNOH WLUGLNOHUL DODQODUD LOL NLQ VD
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PHUNH]L YH \HUHO \ÓQHWLPOHUL WDUDI QGDQ
HGLOHFHN YHULOHULQ YH EX YHULOHU ù QG
XOD W U ODELOPHVL DÄ V QGDQ ÓQHPOLGLU %
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ELU NDQDO ROGXùX YXUJXODQP W U $QFDN DQ
\DSDQ NL LQLQ \DOQ]FD DGHGL DQNHW
LOL NLQ NDUDU YHUPH NDUDU JHOL WLUPH VÙ
HEHYH\QOHULQ EX ÄDO PD\D NDW O P LVWHN
ÄDO PDGD DQNHWL WDPDPOD\DQ HEHYH\QOHU
HEHYH\QOHULQ VRV\R HNRQRPLN VWDWÙOHUL

EDùODP QGD VRUJXODPD\ DPDÄODPDNWDG U $
NRQXVX RODQ NDW O P LÄLQ HWNLOL ELU DUDÄ
NDSVDP QGD \DS ODQ NDW O P LVWHNOLOLùLQ
EXOJXODU Q WÙP VRV\R HNRQRPLN JUXSODUG
GÓQÙ HQ SDQGHPL NR XOODU QGD \D DQW Q Q
RODUDN \HU DOPD LVWHNOLOLùL EDùODP QGD
VÙUHÄWH SODQODPDQ Q JHOL WLUHFHùL DUDÄ

.HQW YH %LU 6DùO N .UL]L 2ODUDN 3DQGHPL

\ O LWLEDUL\OH KD\DW P] Q QHUHGH\VH E
ELU qVDùO N NUL]LGLUr -ÙVWLQ\HQ YHEDV
NÙUHVHO VDOJ QG U DQFDN WDULKVHO VÙUHÄ
D\Q ROPDP W U 3DUODNWXQD .HQWVHO
.LPPHOPDQpQ Q LIDGHVL LOH NHQWLQ NE
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GH L]OHQHELOPHNWHGLU *HOL WLULOHQ DUD
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YH\D NDU OD DELOHFHùL SUREOHPOHUH ÄÓ]ÙP
HOGH HGLOHQ YHULOHUL ELOLPVHO DQDOL]O
EXOXQXOPDNWDG U $QFDN \DS ODQ ÓQJÓUÙOE
DIHW SODQODPDV JLEL \HQL DUDÄODUOD ELU
JHOL WLULOPH\H ÄDO OPDNWD\VD GD &RYLG
DO QG ù QGD ER\XWODU WDKPLQ HGLOHPH\HQ
LÄHUGLùL DUW N JÓUÙOPHNWHGLU %X GXUXP
DUDÄ RODUDN JÓUÙOHQ SODQODPDQ Q NHQWO
WDVDUODQPDG ù Q GD JÓVWHUPL WLU &RQVW
ÄLQGH EXOXQGXùXPX] \Ù]\ O 6$56 0(56 (EROD
GDU RODQ VDOJ QODUOD N VPHQ PÙFDGHOH H
ÙONHGHQ NHQWH ELUÄRN IDUNO ÓOÄHNWH HW
VÙUHÄWH \D DP Q DO ODJHOHQ GÙ]HQLQH JÓ
NDU V QGD NHQWVHO \D DPD GDLU VRUJXODP

6DOJ QODU GDKLO ROPDN Ù]HUH VDùO N DODQ
JHOL WLUGLùL DODQODUGDQ ELU WDQHVLGLU Y
-ÙVWLQ\HQ YHEDV YH NDUD YHED NHQWVHO QÙ
%X WÙU VDOJ QODUOD PÙFDGHOHGH NHQWVHO
JÓUÙOPÙ WÙU 2Q GÓUGÙQFÙ \Ù]\ OGD JÓUÙOE
JHOL LPOHULQH LOKDP YHULUNHQ RQ VHNL]LQ

YH ÄLÄHN KDVWDO NODU NHQWOHUGH JHQL EX
NDSDO VX WHVLVDWODU Q Q NXOODQ P Q RUW
DPDF \OD \DS ODUGD N YH KDYDODQG UPD\D
LWLEDUHQ VDQD\LOH PHQLQ HWNLVL\OH NHQWO
KDULWDODQG UPD \DS ODUDN KDVWDO NODU Q
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NL LQLQ KD\DW Q ND\EHWWLùL 6$56 &R9
+ 1 'RPX] *ULEL ÙONHGH NL LQLQ ÓOÙ
RUWD\D Ä NDQ 0(56 &R9 ³QHU LVH VRQ \DU
GÓQHPOHUGH \D DQDQ EX VDOJ QODUGD NHQW
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ROPDV LWLEDUL\OH ÄÓ]ÙPOHUL GH NHQWVHO
\ÓQHWLPOHUL KDOLKD] UGD VDùO N ÄHUÄHYHVL
SUREOHPOHUOH PÙFDGHOH HGHUNHQ HWNLOHU
HGHU KDOH JHOPHNWHGLU 6KHQNHU %DQ
ELU \RO L]OHPHN ED DU O VRQXÄODU RUWD\D
HOH DO QG ù QGD NHQWVHO JHOL LPH GDLU ID
.HQWVHO HNRQRPLN YH VRV\DO IDDOL\HWOHUL
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NUL]OHU NDU V QGD VDYXQPDV] E UDNP W U
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\D DG ù P] VDOJ Q JLEL WÙP GÙQ\D\ HWNLOH\
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JLEL NXUXODQ WHPDVODU VRQXFXQGD \D\ ODQ
NDUPD N YH EDù PO O NODU RODQ NÙUHVHO N
K]O DN QGDQ ND\QDNODQPDNWDG U %DUED
GXUXP VDGHFH XOXVODUDUDV GHùLO NHQWVH
V Q U Q Q]D\ ßDPDV NHQWVHO DODQODUGDN
VLUNÙODV\RQXQX DUWW UPDNOD ELUOLNWH VR
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KDON VDùO ù YH NHQW SODQODPDV Q Q RUWDN
NDU EDU QPD YH VRV\DO UHIRUPODUOD EDùO
EDU QG UPDNWDG U 6Ó] NRQXVX VDùO N VDGH
GD HWNLVL\OH ROX DQ REH]LWH NÓWÙ EHVOH
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KDUHNHWVL]OLN VRV\DO HWNLOH LPLQ HNVLNO
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GD VDùO NO NHQWOHU ROPD \ROXQGD DG P DW
HUL LOHELOLUOLN DÄ N YH \H LO DODQODUD Ó
ÓQH Ä NP W U ³]ÙGXUX

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EDùODP QGD NDODEDO N NHQW PHUNH]OHUL YH
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NDGDU IDUNO ÓOÄHNOHUGH ÓQHULOHU JHOL V
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SHNL WLUHFHN YH DO QDQ ÓQOHPOHUH X\PD \
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VÙUHFLQLQ FDQODQG U OPDV YH WHNUDU WDU

.HQWWH .DUDU 9HUPH 6ÙUHÄOHULQH .DW O P

.ÙUHVHOOH PHQLQ JHWLUGLùL VHUEHVW YH
SUREOHPOHULQLQ GROD P \ROX\OD GÙQ\D JH
RODELOPHNWHGLU ;LH YG *ÙQÙPÙ]GH &
EX HNLOGHGLU YH VRQXÄODU WDKPLQ HGLOH
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GDKD QH NDGDU VÙUH GHYDP HGHFHùL GH PXùC
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ELUH\VHO KDN YH Ó]JÙUOÙNOHUGHQ PDKUXP HC
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ELU WDUDIWDQ LVH RODELOGLùL ÓOÄÙGH JÙQ
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ED WD ROPDN Ù]HUH WHPHO JHUHNVLQLPOHUH H
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LOH ELUOLNWH D]DOPDV QD UDùPHQ \D DQ OD
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WÙP EX GHùL LPOHU ELU VDùO N NUL]L NDU V
VDùOD\DFDN GÙ]HQOHPHOHULQ JHUÄHNOH WL
RODELOHFHùLQL GÙ ÙQGÙUPHNWHGLU

.HQWOHU NHQWOLOHULQ NHQGL \D DPVDO D
NDW O P Q JHUHNWLUPHNWHGLUYH ELOLPVHO
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WDQ PODPDNWDG U +DUYH\ .XUDQ
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,QQHV YH %RRKHU $LGL\HW GX\JXVXQ
NDPXVDO DODQODU Q KHP NXOODQ P QGD KHP
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0DVVHOOD

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VLVWHPOHULQLQ HUL LOHELOLU JHQL YH XFX]
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\XUWWD ROXQPDV G U *ÙQJÓU q$ Dù GDQ
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]PLU .DU \DNDpGD)DUNO 6RV\R (NRQRPLN

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HNLOOHQPHVLQGH EHOLUOH\LFL URO R\QDPDV
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NR XOODU Q VDùODPDGD KDON Q GHQH\LP HQ
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DO QG ù EX JÙQOHUGH \D DP ÄHYUHOHULQH \
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¤DO PD $ODQ

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GH JÓUÙOPH\H ED ODP W U =DPDQOD PHUNH]G
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ED OD\DQ NRQXWODUD JLUL LPFLOHULQ ÙUHWW
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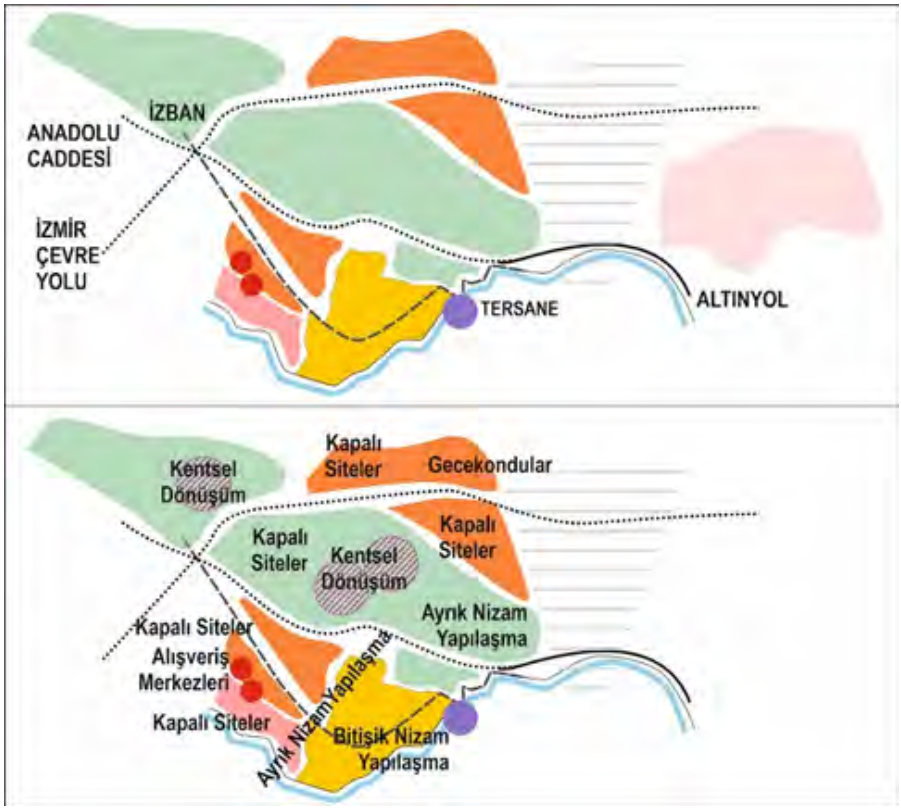

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¤RFXNODU Q YH (EHYH\QOHULQ .HQWVHO 0HN
1RUPDOOH PH 6ÙUHFLQGH ¤RFXNODU Q)L]LNVI
7¹% 7$. SURMHVLQGHQ ÙUHWLOPL WLU ¤DO
V Q UODU QGD \HU DODQ GHYOHW LONRNXOX
HùLWLP DODQ YH 6 Q I ÓùUHQFLOHU
DQNHW X\JXODQP W U $QNHW NDW O PF ODU
HWPH\H \ÓQHOLN VRUXODU LÄHUPHNWHGLU $U
JÓUÙ OHULQH JÓUH \D DG NODU PDKDOOHOHU
ROPDPD YH \HWHUOLOLN DÄ V QGDQ GHùHUOH
]DPDQGD \D DP DODQODU QGDQ EHNOHQWLOHU

HNLO $QNHW ÄHULùL

$QNHWLQ X\JXODQDELOPHVL LÄLQ O YH OÄH
DO QP YH GHYOHW RNXOXQXQ \ÓQHWLFLOHU
GHVWHùLQ VDùODQDFDù L]LQ \D] ODU Ù]HULQ
DUG QGDQ $ùXVWRV D\ QGD RNXOODUD JLGLO
ÓùUHWPHQOHULQH ÄHYULPLÄL DQNHW EDùOD
SDQGHPL NR XOODU Q L\LOH WLUPH\H \ÓQHOL
SURMH ÄDùU V NDSVDP QGD JHUÄHNOH WLULO
GHVWHNOHQL\RU ROGXùX SURMH NDSVDP QGD
\D DG NODU PDKDOOHOHUGH ÄRFXNODU Q Q IL
LOL NLOL RODQ HQJHOOHULQ EHOLUOHQHFHùL
YH \HUHO \ÓQHWLPOHU LOH SD\OD ODFDù EL
ÓùUHWPHQOHUL Ù]HULQGHQ HEHYH\QOHUH LOH

%DNDQO ù YH '(¹)HQ YH 0ÙKHQGLVOLN %LOLPO
RQD\ DO QG ù GD LOHWLOPL WLU (WLN .XUXO
RQDP JHUHNPL WLU %X RQDPGD DQNHWH NDW
\HU DODELOHFHùL YHULOHQ ELOJLOHULQ NL
]RUXQGD ROXQPDG ù YH LVWHQLOGLùL]DPDQ
Ä NDELOHFHNOHUL DÄ NODQP W U $\Q]DPDQ
SURMH HNLS Ù\HOHULQH XOD DELOPHOHUL LÄL
SD\OD OPDV QGDNDW O PF ODUGD JÙYHQ RUWI
JHQL ELU NLWOH\H XOD PDV DPDÄODP W U

$QNHW \DQ WODU DQNHW EDùODQW DGUHVL
RODUDN ND\GHGLOPL YH DQNHW JLUL VD\ ODU
HGLOPL WLU $QNHW JLUL OHULQGH YH WDPDP
WDULKOHUGH SURMH HNLELQFH ÓQOHPOHU DO
GÓQHPGH ÄHYULPLÄL DQNHWH JLUL \DSDQ YH
$QFDN EX GÓQHPL L]OH\HQ KDIWDODUGD VD\ OD
RNXO \ÓQHWLPOHULQH WHOHIRQ LOH XOD OP
KDW UODW OPDV LVWHQPL WLU %X JÓUÙ PHOH
JÙQ VRQUD DQNHWLQ WDPDPODQPD VD\ V QGDN
DPDÄOD RNXO \ÓQHWLPOHUL LOH WHNUDU JÓUÙ
EHNOHQHQ DUW VDùODQDPDP W U %X QHGHQ
VHIHU DQNHWH JLUL \DS S DQNHW VRUXODU Q
]RUXQOX WXWXOPDPDNOD ELUOLNWH LOHWL L
VHUYLVL 606 NXOODQ ODUDN DQNHW EDùODQ
DÄPDODU GXUXPXQGD DQNHWH NDOG NODU \H
DQNHWH JHUL GÓQÙ VD\ V EHNOHQHQ GÙ]H\GH

$QNHW JLUL OHUL YH WDPDPODQPD RUDQODU L
ROGXùX WHVSLW HGLOPL WLU %X RNXOODU Q
%X RNXOODUGDQ ELUL ³UQHNNÓ\ PDKDOOHVLQG
\RùXQ RODUDN HùLWLP DOG NODU ELU RNXOGX
YH ELOJLVD\DU RDQQDNODU Q Q ROGXNÄD V Q
LOH SD\OD OP EX RNXOGD HùLWLP DODQ ÄR
7RSOXPX *HQÄOLN (ùLWLP YH .DON QPD 'HUQHù
HNLEL \ÓQOHQGLULOPL WLU $Q ODQ GHUQHùL
ÄRFXNODU Q HEHYH\QOHUL LOH JÓUÙ PÙ \Ù]
UDQGHYX DO QDELOPL WLU 'LùHU RNXO \ÓQH
WHOHIRQ RDQQDNODU N V WO ROXS ÄDO PD
DQNHW \DS ODELOHFHùL EHOLUWLOPL VH GH EX

6ÙUHÄ LÄHULVLQGH YHUL WHNUDU LQFHOHQPL
DQNHWLQ ÓQHPOL ELU N VP Q GROGXUDQ DQFD
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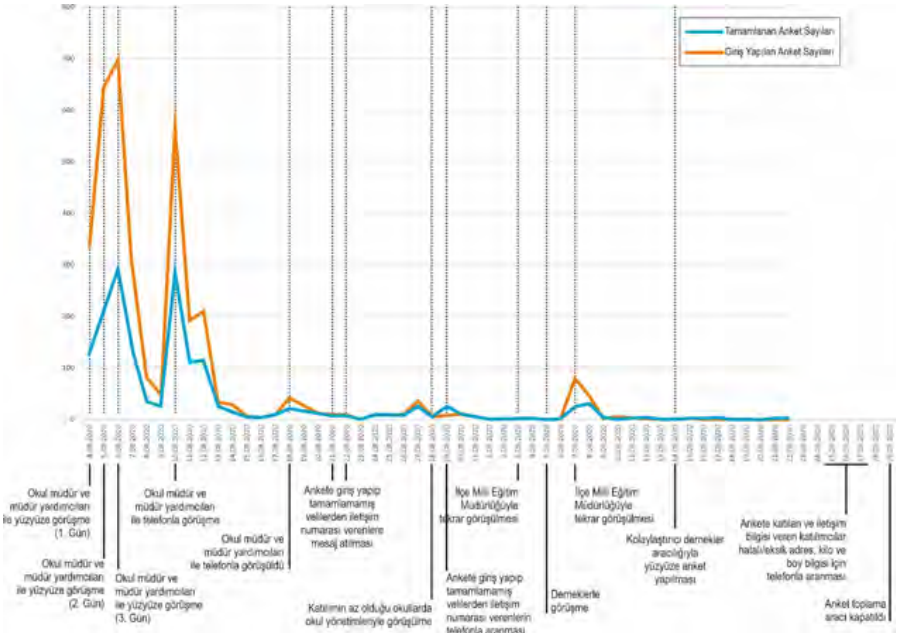

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LOH LOHWL LPH JHÄLOPHVL WDOHS HGLOPL WI
WDPDPODQPD VD\ ODU QGD JÓUHFH ELU DUW
YHUL JLUL L YH YH\D DQNHW WDPDPODQPDV Q
KDIWDV QGD DQNHW EDùODQW DGUHVL NDSDW
ÄHYULPLÄL DQNHW IRUPXQD NL L JLUL \DS
RODQ NR XOODU VDùOD\DQ \DOQ]FD NL
DQFDN ÄDO PD\D NDW OPD\D JÓQÙOOÙ RODQ
YH GROD\ V \OD SURMH NDSVDP QGD YHUL VHV
ROX WXUXOPX WXU

HNLO YHUL VHWLQL ROX WXUDQ HEHYI
HWWLNOHUL NRQXWODU Q PDKDOOHOHUH JÓUH
ED] QGD 7¹ .pWHQ DO QDQ \D JUXSODU Q Q GD

PDKDOOHOHUH JÓUH \D GDù O P DUDV QGDNL
\HUOH LP ÓUÙQWÙVÙ JÓVWHUPH\HQ YH 7¹ . YH
JÓ]OHPOHQHPH\HQ <DPDQODU YH 6DQFDNO PD
G QGD .DU \DND LOÄHVL LÄHULVLQGHNL PD
YHULOHUL WRSODQP W U ¤DO PDQ Q KHGHI JU
DODQ QGDNL RNXOODUGD HùLWLP DODQ Ó
ÓUQHNOHPLQ pV QD XOD OP VD GD DQNH
\DU V ÄDO PD\D NDW OPDGD LVWHNOL R

HNLO 0DKDOOHOHUH *ÓUH 'Dù O P

%XOJXODU

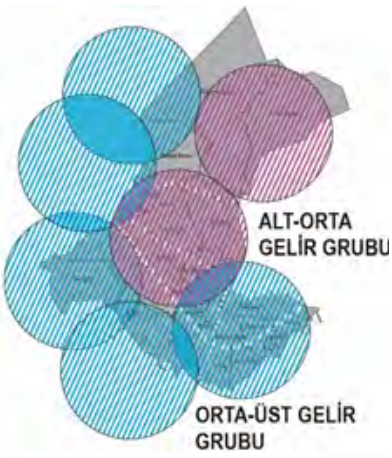
¤DO PDQ Q YHULOHULQLQ WRSODQPDV D DPDV
\D D\DQ QÙIXVXQ VRV\DO \DS V QD JÓUH IDUNO
NDW ODQ HEHYH\QLQ DQQH \D RUWD
KHVDE QD ÄDO DQ pL ÙFUHWOL ÄDO DQG U
PHPXU RILV ÄDO DQ RUDQ pWLU .DV
HPHNOL YH pX HY NDG Q G U

(ùLWLP GXUXPODU DÄ V QGDQ EDN OG ù QGD
pÙLONRNXO pL RUWDRNXO PH]XQXGXU
EHOLUWPL NHQ NDW O PF ODU Q pÙ OLVDQVÙ
*HOLU GXUXPX GDù O P QD EDN OG ù QGD NDW
JHOLUH VDKLSWLU $\O N RUWDODPD JHOLUL DV

NDW O PF ODU Q RUDQ pGLU 7/ t 7/
NDW O PF RUDQ 7/ t 7/ DUDV QGD
pWLU .DW O PF ODU Q pX 7/ YH ÙVV
7DEOR

7DEOR +DQHKDON 5HLVLQLQ (ùLWLP YH *H

7DEOR pGH \HU DODQ YHULOHU 7¹ .6RV\R (NI
JUXSODU QD D\U W U OP W U 7¹ . 6(6 WDEORV
& & ' YH (VWDWÙOHULQH JÓUH JUXSODPD \
YH % JUXSODU qÙVWr & YH & JUXSODU qRU
D\U W U OP W U ¹VW 6(6 JUXEX HùLWLP YH J
JHOLU GXUXPX GÙ ÙN NHVLPOHUL JÓVWHUPHNW
NDODQ NHVLPOHUL LIDGH HWPHNWHGLU %XQD
JUXEXQGD LNHQ \DOQ]FD pL DOW 6(6 JUXE



SES GRUBU	Katılımcı Sayısı (n)	Katılımcı Oranı (n/N)	
A	140	% 9	ÜST-SES
B	455	% 29,2	GRUBU % 38,2
C1	435	% 27,9	ORTA-SES
C2	314	% 20,1	GRUBU % 48,0
D	160	% 10,3	ALT-SES
E	55	% 3,5	GRUBU % 13,8

HNLO .DU \DND 6(6 'Dù O PODU

6(6 JUXSODU QD JÓUH NDW O PF ODU Q PDKDOC
WXUXQFX UHQNWH JÓVWHULOHQ PDKDOOHOHU
ROGXùX VDU UHQNWH JÓVWHULOHQ PDKDOOHC
GDKD ID]OD ROGXùX PDKDOOHOHUL EHOLUWPHN
PDKDOOHUGHQ NDW O PF ODU WRSODP YHULQ
KDOLKD] UGD N \ WDVDU P SURMHVL JLEL EÙ\ÙN
JLEL \HQL ELU XOD P ELÄLPLQLQ \HU VHÄWLùL
\RùXQOD W ù YH NHQWLQ ÓQHPOL UHNUHDV\RQ
\HWHUOL ELULPOHUL RODQ YH ÓQHPOL XOD P
WRSOX NRQXW DODQODU YH NDSDO VLWHOHUL
\HU DODQ PDKDOOHOHUGHQ NDW O P LVH P
EDQG QGD \HU DODQ \HUOH LPOHU YH ÓQHPOL
ED ODPDV VRQUDV QGD HNLOOHQHQ YH GHùL
DODQODUG U %XUDGD JÓUÙOPHNWHGLU NL IL
EÓOJHVL VDKLS ROGXùX QLWHOLNOHU \ÓQHWL
WDULKOL ROPDV QGDQ ND\QDNO RODUDN EDKÄ
VDKLS ROPDV QHGHQL\OH SDQGHPL VÙUHFLQLQ
ÄHYUHOHU DÄ V QGDQ GDKD DYDQWDMO EXOX

NDW O P Q GDKD \RùXQ RODFDù EHNOHQPL VH
EHNOHQWLQLQ QHGHQL % EÓOJHVLQLQ $ EÓOJ
GH]DYDQWDMO ROGXùXQXQ GÙ ÙOPHVLGLU %X
V Q UODU ÄRN QHW ÄL]LOPH\HQ VRV\R HNRQR
EDU QG UDQ ELU \HUOH LP GRNXVXQD VDKLSWL
EX KRPRMHQOLNWHQ V \U ODUDN ÙVW 6(6 JUXE
GDKD \RùXQ ROX WXùX WHVSLW HGLOPL WLU %
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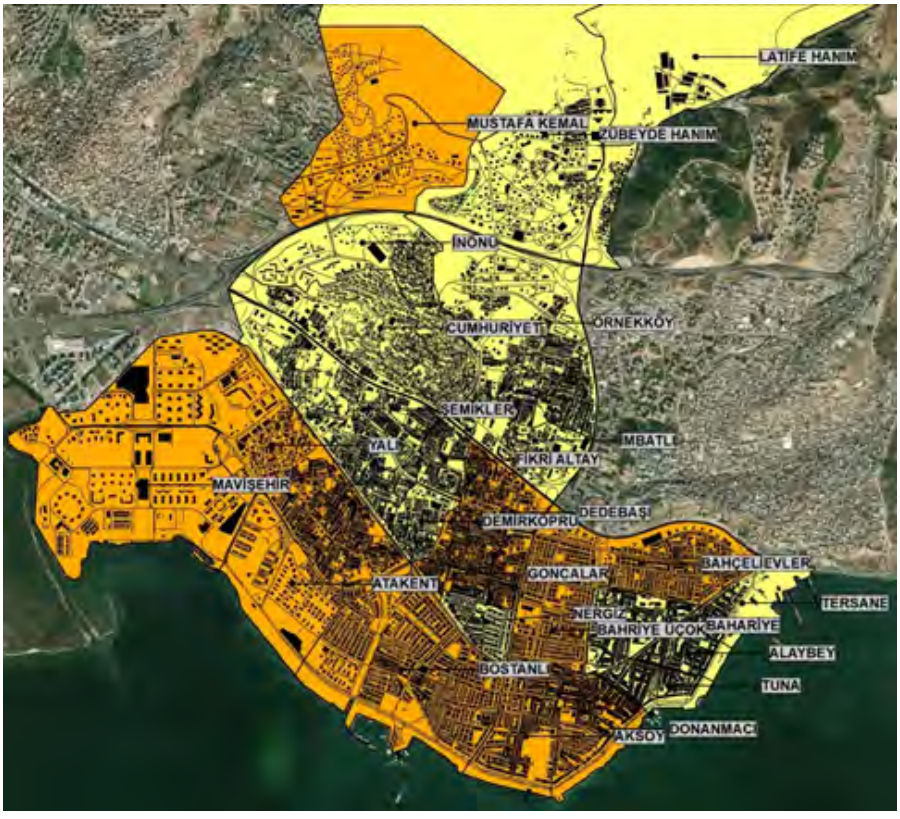

HNLO 6(6 JUXSODU Q Q PDKDOOHOHU JÓUH GDù O P

.HQWVHO %LU .UL] .DU V QGD .DW O P Q
'HùHUOHQGLULOPHVL

\ O QGD ED OD\DQ YH \ O Q Q HQ ÓQHP
SDQGHPLVL VDùO N WHPHOOL ELU NHQWVHO N
E UDNP W U YH E UDNPD\D GHYDP HWPHNWHGLU
EXOD ULVNLQL HQ D]D LQGLUPHN LÄLQ DO QD
NDPXVDO DODQODU Q GRQDW ODU Q WHNUDU
VH\UL EHOLUWLOHUL YH GLùHU Ó]HOOLNOHUL
HGLOHQ \D DP WDU] QD KHQÙ] GÓQÙOHPHVH GH
JÙQGHOLN \D DPD DGDSWH ROPD\D \ÓQHOLN ÄÓ
¤ÙQNÙ SDQGHPLQLQ HWNLOHUL HNRQRPLN WRS
YH VLVWHPOHU EX NUL] NDU V QGD W NDQP
JLEL W EEL \DNOD PODU EDùODP QGD JHOL WH
7¹% 7$. WDUDI QGDQ VDOJ Q Q WHWLNOHPL RG
GH HOH DOPDV JHUHNOLOLùL JÓ] ÓQÙQGH EX
SURMH ÄDùU V QD Ä N OPDV SDQGHPLQLQ HWN
JÓVWHUJHVLGLU 3URMH ÄDùU V Q Q DPDF qVD
VRV\DO YH EH HUL ELOLPOHU SHUVSHNWLLQGH
JHOL WLULOPHVLr RODUDN EHOLUOHQPL ÄDùU
GXUXPXQ YH HùLOLPLQ NDQ W WHPHOOL ELOLP
X]XQ YDGHOL SURMHNVL\RQ ÓQJÓUÙ DQDOL]
DQDOL] YH ÓQJÓUÙOHU GRùUXOWXVXQGD NDUDU
ÓQHULOHUL ROX WXUXOPDV EHNOHQPL WLU 7¹
JHQL OHWPHN YH DNDGHPLN ÄHYUHQLQ ÙUHWHP
DG PG U %X ÄDO PDQ Q ÓUQHN DODQ Q ROX W
SURMHOHUGHQ ELU WDQHVLGLU %XUDGD VXQXÇ
YHULOHU LOH ELUOLNWH SODQODPDQ Q JÙQGHP
VÙUHÄWH GH JHUHNOL RODQ NDW O P SHUVSHN

%X ÄDO PDQ Q WHPHOLQL ROX WXUDQ SURMH
]DPDQODUGDQ IDUNO RODUDN N V WODPDODU
GÓQHPGH Ó]HOOLNOH GH SDQGHPLQLQ ED ODG
JHUHNVLQLPOHULQLQ DNVL \ÓQÙQGH]RUXQOX
HEHYH\QOHULQLQ \D DG NODU ÄHYUH\H LOL NL
ÄDO PD \ÙUÙWÙOPÙ WÙU .DW O PF ODUD ÄRFX
GHVWHNOHPHN DPDF \OD NHQWVHO G PHNDQG
\D DG ù PDKDOOH\H LOL NLQ VDùO N JÙYHQOL
PHWURSROLWHQ ELU NHQWLQ ÓQHPOL ELU PHUN
NHQWVHO PHNDQGDQ EHNOHQWLOHULQL WHVSL

WHPHOLQLQ ELU VDùO N NUL]L NDU V QGD PH
NHQW NDUDU YHULFLOHULQLQ EX QHGHQOH SU
DODQODU QD LOL NLQ VRUXQODU Q GX\XDEL
YHUHELOHFHùL ELU I UVDW VDùODPDNWDG U

3DQGHPL LOH PÙFDGHOH VÙUHFLQGH DO QDQ Ó
ÄRFXNODU EXOXQPDNWDG U 2NXOODU Q NDSD
N V WODPDODU JLEL X\JXODPDODU ÄRFXNODU
NDU ODPDODU QGD V Q UODQG UPDODU ROX W
HEHYH\QOHUL GH HWNLOHPHNWH ELUÄRN HEH
ÄRFXùX LÄLQ HQGL H GX\PDNWDG U %X ÄDO
LÄHUPHVL KHP GH HEHYH\QOHULQ ÄRFXNODU
LOHWPHVLQGH ELU DUDÄ ROGXùX YHUL WRSOD
KWL\DÄ GX\XODQ JÙYHQ RUWDP LÄLQ SURMH
GX\GXùX RNXO ÓQHWLFLOHUL RNXO DLOH ELU
YDV WDV \OD DQNHWH NDW OPD\D WH YLN HG
KHGHßHQHQ WRSODP UDNDPODUD ROGXNÄD N V
RNXO YH V Q I GÙ]H\LQGH H LW ELU HNLOGH GI
JÓ]OHPOHQPL WLU .DW O P ÄRN GDKD JHQL E
IDUNO ELU ÓUQHNOHP YH\D PHWRW GHQHQPHV
\HU DOPDV JHUHNOLOLùL GÙ ÙQFHVLQGHQ ÓW
VRUXQ RDQ QRNWDODU ÄÓ]ÙPH NDYX WXUXO
ÓUQHNOHPH XOD PDV \OD ELUOLNWH LVH (\OÙC
YHULOHULQ YH NDW OPD GÙ]H\OHULQLQ EHOLU
ÄDO PDGD 6RV\R (NRQRPLN 6WDWÙ 6(6 EDN P

¤DO PD NDSVDP QGD IL]LNVHO ÄHYUH QLWHC
RDQ JUXSODUGDQ ÄRN WHUVLQH QLWHOLNOH
6(6 JUXSODU Q Q ÄDO PD\D NDW O P JÓVWHUH
PHUNH]H DODUDN NDU OD W NODU VRUXQODU
JÓUHFHùL EHNOHQPL WLU $QFDN EXOJXODU EX
YH ÄDO PDQ Q RDELELOGLùLQFH WDEDQGD JHQ
ÙUHWLOPHVLQH UDùPHQ ÄDO PD\D NDW O P Q \
L]OHQPL WLU 0HNDQVDO RDUDN KDOLKD] UGD
DODQODUGDQ YH D\U FD DOW JHOLU JUXEXQG
NDW O P DUDF Q IDUNO QHGHQOHUGHQ WHUFI
LÄLQ ÄHYULPLÄL ELU DQNHW GROD W UPDN G
DQFDN ÄRN D] VD\ GD JHUL GÓQÙ DO QPDV D
XOD ODUDN DQNHWL WDPDPODPDODU \ÓQÙQQ
ÄDO PD\D JÓQÙOOÙ ROPDN LVWHPHPHVL JÓ] ÓC

VDGHFH ELU DUDÄ RODUDN GHùLO NDW OPD N
JHUHNWLUPHNWHGLU 6RQXÄ RODUDN &RYLG
NDU V QGD NHQWLOHULQ SODQODPDGD NDUDU
VRV\R HNRQRPLNJUXSODU Ù]HULQGH GHQH\LPOH
ÓQHPOL NRQXODU DUDV QD JLUHFHNWLU

.D\QDNÄD

$OSDU % , &RY G 6DOJ Q 6ÙUHFLQGH .DG Q YH
6D\ P <RUùXQ (G &RYLG 3DQGHPLVLQLQ (NRQRPLN 7P
VWDQEXO VWDQEXO ¹QLYHUVLWHVL

$UQVWHLQ 6 5 $ /DGGHU 2I &LWL]HQ3DUWLFLSDWL

$\GDU (HKLU 3ODQODPDV QGD +DN .DW O P Q Q

%DOF ' 7ÙUN $ &RYLG 6RQUDV .HQW 3ODQODPD
RI 7XUNLVK6WXGLHV GRL KWWS G[GRL RUJ 7XUNL

%DQDL 5 3DQGHPLFDQGWKH3ODQQLQJ RI 5HVLOLHQ

%DUEDURVVD / 7KH 3RVW 3DQGHPLF &LW\ &KDOO
(QYLURQPHQW $Q 2YHUYLHZ RI ,WDOLDQ&DVHV 6XVWDLQ

%DWW\ 0 7KH&RURQDYLUXV&ULVLV :KDW:LOOWKH3
&LW\ 6FLHQFH t

%R]NXUW 9 3DQGHPL 'ÓQHPLQGH ¤DO PD (NRQR
'HPLUED 9H\VHO %R]NXUW 6D\ P <RUùXQ (G &RYLG
(WNLOHUL LÄLQGH V VWDQEXO VWDQEXO ¹QLYH

&RQVWDEOH + .RURQDYLUÙV 6DOJ Q KDVWDO NODU
ZZZ EEF FRP WXUNFH KDEHUOHU GXQ\D

(EDK 7XQÄD\ + (EDK + 2 6DùO NO .HQWOHU 9H 3
3(<=$- (ùLWLP %LOLP .ÙOWÙU YH 6DQDW 'HUJLVL

(YHUVROH 5 5HPDNLQJ3DUWLFLSDWLRQ &KDOOH
8QLYHUVLW\3UHVVDQG&RPPXQLW\ 'HYHORSPHQW -RXUQDO

*ÙQJÓU 6 ('HPRNUDVL 8PXWODU YH 5LVNOHU OH

+DKQ $ - &LW]HQV LQ /RFDO3ROLWLFV 1RQSDUWLF
'HYHORSPHQW 6RFLHW\

+DQVHQ + 6 3URVSHUL ' & &LW]HQ3DUWLFLSD
&RPSXWHUV (QYLURQPHQW DQG 8UEDQ 6\VWHPV

+DUYH\ ' 7KH5LJKW WRWKH &LW\ 1HZ /HIW5HYLHZ
LL DUWLFOHV GDYLG KDUYH\ WKH ULJKW WR WKH FLW\

,QQHV - (%RRKHU ' (5HIUDPLQJ3XEOLF3DUWL
7KHRU\ 3UDFWLFH t

.DUN Q 1 H .DW O P .DYUDP YH 6ÙUHFL .DPX 6
2ODELOLUOLùL 6RV\RHNRQRPL

.DU \DND %HOHGL\HVL E W .DU \DND %LOJLOHUL
ELOJLOHUL a WH[W .DU \DND & \ O QGD]PLU
ELU \HUOH LP \HULGLU

.LPPHOPDQ 0 &DQ &LW\ /LIH 6XUYLYH&RURQDY
FRP ZRUOG HXURSH FRURQDYLUXV FLW\ OLIH KWP

.OHLQPDQ 0 3ROLF\&KDOOHQJHVIRUWKH3RVW SDQ
t

.XELFHN + 7KH3RWHQWLDO RI (t3DUWLFLSDWLRQ
1XQHV6LOYD (G +DQGERRN RI 5HVHDUFK RQ (t3ODQQLQ
V 1HZ <RUN ,*, *OREDO

.XUDQ + .LWDS QFHOHPHVL +HQUL/HIHEYUH HK

/DL < <HXQJ : &HOL / $ 8UEDQ ,QWHOOLJH
3XEO F+HDOWKDQG6XUYHLOODQFH

0DLHU . &LWL]HQ3DUWLFLSDWLRQ LQ 3ODQQLQJ &

0RUDFL) (UULJR 0))D]LD & &DPSLVL 7 &DVWHOO
WR)DFH&OLPDWH&KDQJHDQG3DQGHPLF 6XVWDLQDELOLW\

³QHU .ÙUHVHO 3DQGHPL &29,' YH .HQW <ÓQH
6RFLDO6FLHQFHV5HVHDUFK-RXUQDO

³]WD .DUO 5 * ¤HOLN\D\ 6 $N OO .HQWOHULQ *H
6RV\DO %LOLPOHU (QVWLWÙVÙ 'HUJLVL 6DOJ Q +DVWDO

³]ÙGXUX % + &29,' YH HKLUOHU $QDUD GHD

3DUNHU (0D\QDUG 9 +XPDQLWDULDQ5HVSRQVHW
/RQGUD ,QWHUQDWLRQDO ,QVWLWXWHIRU (QYLURQPHQW

3DUODNWXQD &29,' 6DOJ Q QGD (NRQRPLQLQ '
FRQWHQW XSORDGV &29,' 6DOJLQLQGD (NRQRPLQ

3DUQHOO 6 7KH(QDEOLQJ&RQGLWLRQV RI 3RVW SD
6FLHQFH t

3LTXDUG % *ULQGVWHG $ &LWLHVDQG&ULVHV
=DPPLW (G &LWLHVDQG&ULVHV LÄLQGH V %LO

3RODW (3DQGHPLGHQ 6RQUD .HQWVHO 0HN¿QD (
SDQGHPLGHQ VRQUD NHQWVHO PHNDQD HULVHELOLUOLN V

6D\DQ $WDQXU * &29,' YH 1HGHQ (YLQL]LQ <DQ QG
ZZZ VNE JRY WU ZS FRQWHQW XSORDGV &29,'
,KWL\DFLQL] 9DU 'RF 'U *XO 6D\DQ $WDQXU SGI

6D\ Q ³ %R]NXUW 9 3DQGHPLGH .ÙUHVHO .HQWW
'HPLUED 9H\VHO %R]NXUW 6D\ P <RUùXQ (G &RYLG
(WNLOHUL LÄLQGH V VWDQEXO VWDQEXO ¹QLYH

6KDULIL $ .KDYDULDQ *DUPVLU $ 5 7KH &
&LWLHVDQG0DMRU/HVVRQVIRU8UEDQ 3ODQQLQJ 'HVLJQ

6KHQNHU - &LWLHV$IWHU&RURQDYLUXV +RZ &RYL
KWWSV ZZZ WKHJXDUGLDQ FRP ZRUOG PDU OLIH DI

6LWNR 3 0DVVHOO $ %XLOGLQJ 8EDQ 5HVLOLHQ
5HWULHYHGIURPKWWSV ZZZ SUHYHQWLRQZHE QHW ILOHV

DKLQ . YH $OWXQ $ .HQWOL 9DWDQGD .DW O P ³C
(NQRPL 'HUJLVL

7HNHOL 0RGHUQL]P 0RGHUQLWH YH 7ÙUNL\HpQLQ

7XùDÄ ¤ .HQWVHO 6ÙUGÙUÙOHELOLUOLN YH .HQWV
&RYLG 3DQGHPLVL 9DQ <Ù]ÙQFÙ < O ¹QLYHUVLWHVL 6RV
6D\ V

7ÙUNL\H %LOLPVHO YH 7HNQRORMLN $UD W UPD .XUXPX >7
3URMHOHULQL 'HVWHNOHPH 3URJUDP q&29,' YH 7RSOX
6RUXQODU YH ¤Ó]ÙPOHUr ³]HO 3URMH ¤DùU V 5HWULHYHC
GHVWHN SURJUDPODUL LFHULN FRYLG VREDJ FDJULV

7ZLJJ - 0RVHO , ,QIRUPDOLW\ LQ 8UEDQ &ULVLV5H
>2',@

;LH - /XR 6)XUX\D . 6XQ ' 8UEDQ 3DUNV DV
6XVWDLQDELOLW\

9DQ GHQ %HUJ + +RZ :LOO &29,' $IIHFW 8UEDQ 3
EORJ ZLOO FRYLG DIIHFW XUEDQ SODQQLQJ URJLHU YDC

=ÙOILNDU + ³]PHQ 6 &29,']RODV\RQ 6ÙUHFLC
'DYUDQ OL NLOHUL 'LOHN 'HPLUED 9H\VHO %R]NXUW
7RSOXPVDO 9H 6L\DVDO (WNLOHUL LÄLQGH V VWD

WHPDWLN V

352) '5 52*(5 .

02'(5$7³5

&HUHQ *DP]H <D

%H\RQG WKH 9LUXV 8UEDQ 5HVH RI 5LVN DQG 8QFHUWDLQW\

5RJHU .HLO

)DFXOW\ RI (QYLURQPHQWDO DQG 8UEDQ &KDQJH <R

,QWURGXFWLRQ

7KH SDQGHPLF H[SHULHQFH VHHPV WR VXJJHVW ULVN DQG XQFHUWDLQW\ LQ DQ XUEDQ ZRUOG RI XQFHUWDLQW\ :KDW KDV FKDQJHG LW DSSH WKDW QRZ FKDUDFWHUL]H RXU ZRUOG 7KDW X RI FRPSOH[LW\ DV &DQDGLDQ MRXUQDOLVW (WK FRPSOH[LW\ RXU ZRUOG KDV EHFRPH D PXOWL FDWDVWURSKHV HDFK FRPLQJ ZLWK WKH GLUH WKDW DJDLQ PD\ EH RQO\ D TXHVWLRQ RI SHU &ROH UHPLQGV XV WKURXJK KLV QDUUDWRU LQ ZKR DUH FRPSOHWHO\ XQSUHSDUHG IRU GLVDV 7KDW VHFXUH ZRUOG LV RI FRXUVH QRW WKH F EXW LW LV XQLTXH WR WKH WLPH DQG SODFH ZH RXWVLGH RI WKDW UDQJH RI H[SHULHQFHV LQVL FOHDUO\ GLYLGHG LQWR oEHIRUHp DQG oDIWHU DUH QRW VR QHDWO\ VHSDUDEOH 7KHVH DUH S PXFK DV FRQWLQXHG LQ LQWHQVLILHG FRQWLQ

SURFHVVHV RI PLFUR VSHFXODWLRQV DQG FRP
,Q PDQ\ SDUWV RI WKH ZRUOG WKH SDQGHPLF
DIIHFWHG XUEDQ FRPPXQLWLHV DQG LW LV QRW
VSDWLDO QLFKH

6R LW PLJKW EH XVHIXO DV , GR LQ WKLV EU
XUEDQL]DWLRQ DQG GLVHDVH LQ WKLV FRQWH[
JRYHUQDQFH DQG SODQQLQJ SOD\HG D UROH R
UHVSRQVH WR SUHSDUDWLRQ UHFRJQL]LQJ WK
KDV EHHQ VHYHUHO\ VKDNHQ :H DOVR DVN ZKD
WKH SDQGHPLF FDUULHG ZLWK LW DQG SURSRV

$Q XUEDQ ZRUOG RI HPHUJHQFLHV DQG ULVN

,Q WKHLU ZRUN RQ ULVN KD]DUGV HPHUJHQF
KDYH IRXQG WKDW q:KLOH KD]DUGV DUH QDWXU
ODWWHU KDOI RI LW EHFDPH FOHDU DV W
LV WLPH WR IRUFHIXOO\ LPSUHVV RQ SHRSOH
RI 6$56 &R9 DUH KHUH WR VWD\ 7KLV LV WKH
RI WKH SHUPDQHQW FULVHV H[SHULHQFHG E\ V
ZH FDQ PDLQWDLQ WKDW ZKDW DSSHDUV
KDV EHHQ WKH DOZD\V QRUPDO LQ PDQ\ FLWLH
EHWZHHQ DQG LQ DOO FLWLHV LQ RXU SODQHW
QRZ DV LQWHUWZLQHG DV HYHQ LQ WKH ULFK
FDUH V\VWHPV LQVWLWXWLRQDO]HG SXEOLF
VHFWLRQV RI FLWLHV KDYH EHHQ UDYDJHG E\ V
PDQ\ DUHDV ZKHUH ULVN IDFWRUV VXFK DV OR
WUDQVLW RYHUFURZGHG OLYLQJ FRQGLWLRQ\
FRPSRXQGHG ZHUH SDUWLFXODU\ KDUG KLW
WR VORZ RU GHOD\HG YDFFLQDWLRQ UROORXW

7KLV REVHUYDWLRQ RI IROGHG DQG FDVFDGLQJ
SDQGHPLF OHDGV WR WKH QRWLRQ RI V\VWHPL
JHRSK\VLFDO KD]DUGV H J HDUWKTXDNHV WKD
FKDQJH FDXVLQJ IXUWKHU GLVHDVH DQG PXO
RU DIIHFW GLVDVWHUV WR ZKLFK GLIIHUHQW S
YDULDEOH VRFLDO SRVLWLRQ RU GLVSRVLWLRQ

6\VWHPLF ULVNV HPHUJLQJ IURP VXFK FRPSRX
ZH LQFUHDVLQJO\ ILQG LQ XUEDQ VHWWLQJV
WUDQVERXQGDU\ DQG JOREDO LQ QDWXUH GLV
WULJJHU DQG HIIHFW DUH QRQ OLQHDU DQG LQ
IURP ODJ LQ SHUFHSWLRQ DQG UHJXODWLRQ L
6FKZHL]HU DQG 5HQQ

,PSRUWDQWO\ IURP WKH SRLQW RI YLHZ RI PX
QRZ EHFRPH D PDMRU LVVXH WDNHQ XS E\ WKH
RI WKH SUHGLFWLYH FDSDFLWLHV RI GLVHDVH
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SODQQLQJ JDPH WKDW LQYROYHV PDQLSXODWL
XUEDQ SODQQLQJ 5DWOLII

,Q WKH FOLPDWH HPHUJHQF\ LQVXUDQFH ULVN
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,/6 SOD\V DQ LQFUHDVLQJO\ LPSRUWDQW UR
DFFXPXODWLRQ IURP FOLPDWH ULVN ,/6 VHUYH
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LQVXUHUVr 7D\ORU 7KLV PRGH RI WKLQ
LPSDFWV RQ WKH ZD\ ZH SUHSDUH WKH SRVWSD

6LPLODUO\ GHQLDO KDV EHHQ D SUREOHP IDF
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GLVWDQFLQJ HWF IUHVK RQ SHRSOHpV PLQG DQ
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'HQ\ WKH 3UREOHP ([LVWV 'HQ\ :H UH WKH &D
FDQ 6ROYH ,W DQG ,W V WRR /DWH 1XFFLWH
E\ D V\VWHPDWLF FDPSDLJQ WR EULQJ QXDQFH
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WR D FXUUHQW SDQGHPLF DQG SUHSDUHGQHVV
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5REHUWV 0XQLFLSDO DFWLRQ ORFDO SX
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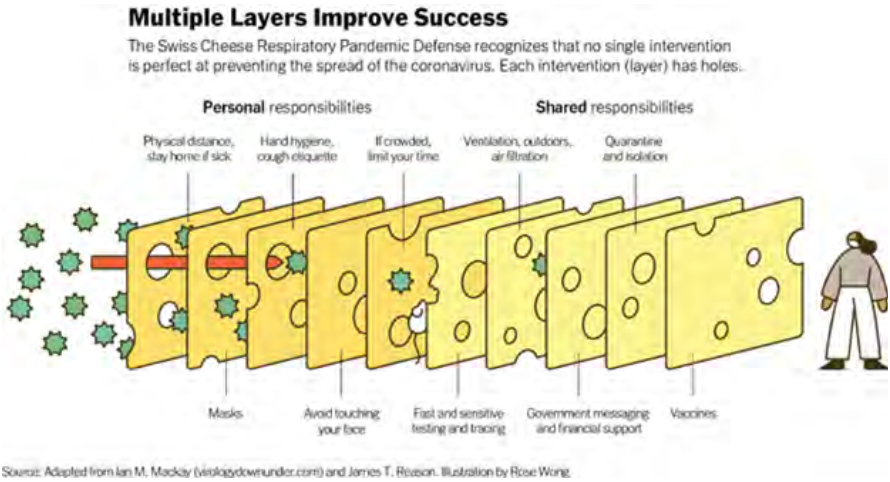
)LJXUH

8UEDQL]DWLRQ DQG GLVHDVH ZKDW KDV FKDQ



)LJXUH 7KH 6ZLVV &KHHVH PRGHO 6RXUFH 5

7KH OHJDFLHV RI WKH K\JLHQLF FHQWXU\ PRG

7KH OHJDF\ RI WKH WK FHQWXU\pV WKUXVWV
DQG RQH XUEDQ UHPDLQV LPSRUWDQW WRGD\
VWLOO GHDO ZLWK ERWK ,Q WKH ODWH V
WUXPSHWHG YLFWRU\ DIWHU YLFWRU\ RYHU PL
IRU PLOOHQQLD $W WKH VDPH WLPH WKH JUR
WKH DVVXPSWLRQ WKDW ZH ZRXOG VRRQ DOO
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)LUVW WKHUH ZDV WKH DVVXPSWLRQ WKDW P
WR FUHDWH D ZRUOG ZLWKRXW LQIHFWLRXV
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QRWHG LQ q3RZHUIXO WRROV KDYH EHHQ
LQ PDQ DQG LQ VRFLHW\uWKH WRROV RI PLFU
PHDQV IRU SUHYHQWLQJ RU DOOHYLDWLQJ GL
GHYHORSHG DQG DSSOLHGfDQG QHYHU EHIRUH
D SHDN RI KHDOWKfr LQ 6SHOOEHUJ DQG 7D\O
IURP LQIHFWLRXV GLVHDVH ZHDNHQHG VRFLHV

SDQGHPLFV 3XEOLF KHDOWK DV D SUDFWLFH \
FRQGLWLRQV HDUO\ LQ WKH WK FHQWXU\ KDG
WKDW WLPH DQG LWV HIILFDF\ EHHQ qVKURXGH

6HFRQGO\ DW WKH VDPH WLPH ZKHQ PHGLFDO
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IRUPXODWHG DV D K\SRWKHVLV E\ +HQUL /HIHE
WKDW KXPDQLW\ OLYHV LQ DQ qHQWLUHO\ XUED
/HIHEYUH 7KLV KDV PHDQW DV 7KRPDV %R
WKH &RYLG SDQGHPLF KLW WKH ZRUOG WKDW
%ROO\N\ EDVHG KLV VKRUW DUWLFOH DW WKH
KDG SUHGLFWHG LQ KHU FODVVLF 7KH 'HDWK DQ
RQFH WKH PRVW KHOSHVV DQG GHYDVWDWHG
FRQTXHURUV r FLWHG LQ %ROO\N\

,Q VXEVHTXHQW GHFDGHV ERWK K\SRWKHVHV
GLVHDVH DQG WKDW XUEDQL]DWLRQ DFWHG DV
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LQ WKH ODWH V HDUO\ V LW ZDV WLPH
DQG LQIHFWLRQ DQG WR GHYHORS D QHZ qXE
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ODQGVFDSHV RI XUEDQL]DWLRQ JOREDOL]HG IR
WKDW QRZ GHWHUPLQHG WRJHWKHU WKH FRQGI
KDG WR EH LPDJLQHG

8UEDQ SROLWLFDO SDWKRORJLHV LQ WKH H[WH

,Q ZRUN FRQQHFWHG WR WKH VWXG\ RI JOREDO
&RYLG SDQGHPLF ZH KDG DUJXHG WKDW FRQ
VXEXUEDQL]DWLRQ SRVW VXEXUEDQL]DWLRQ D
WKH YXOQHUDELOLW\ WR HPHUJLQJ DQG VSUHD
FRQVWHOODWLRQ DW WKH QH[XV RI XUEDQL]D
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JRYHUQDQFH VKLIWV KDYH EHHQ DW WKH FRUH
PDGH WKH UHODWLRQVKLSV RI XUEDQL]DWLRQ
WKHUH ZHUH H[LVWLQJ H[DPSOHV RI YDULRXV
RXWEUHDNV DURXQG WKH ZRUOG WKDW KDG UH
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:RUOG FDPSDLJQ DQG PRGH RI WKLQNLQJ WKD
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LQIHFWLRXV GLVHDVHV PDQLIHVWLQJ WKHPVH
EXW DOVR VRFLDO FXOWXUDO DQG SROLWLFD
LQFUHDVLQJ XUEDQL]DWLRQ RI WKH ZRUOG DQ
SURFHVV :ROI

7KH JHRSROLWLFDO WHFWRQLF VKLIWV GXULQ
LQGHHG GUDPDWLF DQG UHßHFWHG D FKDQJLQ
LQWHQVH SURFHVVHV RI XUEDQ FRQFHQWUDW
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H[RVNHOHWRQ RI WKH JOREDO HFRQRP\ WKURX
RI LWV YLFWLPV 7KH LQWHUQDWLRQDO FRQWU
VWRRG RXW DV KXEV LQ WKH QHWZRUN RI WKD
WKH ZRUOG DW WKH WLPH WKDW WKHUH FRXO
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*OREDOL]DWLRQ DV DQ HFRQRPLF DQG FXOWXU
EXW QRW DQ H[SHULHQFHG UHDOLW\

7KLQJV FKDQJHG GUDPDWLFDOO\ LQ RQO\ \HD
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WKDW UHVXOWHG LQ ORFNGRZQV PRELOLW\ U
UHVSRQVH WKURXJK PDVVLYH YDFFLQDWLRQ W
2UJDQL]DWLRQ KDG GHFODUHG WKH GLVHDVH
ERQHV RI JOREDO FDSLWDOLVP DQG WKDW ZD\
FDSLWDOLVP WKDQ WKH RQH WKDW ZDV KLW E\
ZDV QRZ DQ qLQQHUODQGr RI FDSLWDOLVP QR
REYLRXV LQ &KLQD LWVHOI DV EHFDPH DSSDUH
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LQQHUODQGV RI WKH JOREDO SURGXFWLRQ FK
H[SHQVLYHr =DLURQJ

7KH H[SDQVLRQ RI FDSLWDOLVW UHDFK LQ XUE
DQQLKLODWLRQ RI VSDFH WKURXJK WLPH DQG U
PHDQV RI WUDQVSRUWDWLRQ KDYH JDWKHUHG V
VKRUWHQHG $W WKH WLPHV RI 6$56 LQ WK
XQGHU ELOOLRQ DQQXDO SDVVHQJHUV :KHQ
ERG\ RI D KXPDQ EHLQJ WKDW QXPEHU KDG UL
VWDWLVWLFV DLUOLQH LQGXVWU\ SDVVHQ

:KLOH GLVHDVH EHFDPH H[WUHPHO\ FRQFHQWU
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/RQGRQ DQG 1HZ <RUN EXW LW VRRQ EHFDP
SHUYDVLYH UHDOLW\ RI H[WHQGHG XUEDQL]DW
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,W UHODWHV WR RXU JHQHUDO EHOLHIV LQ KRZ
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E\ VRPH PHDVXUH KWWSV ZZZ ZRUOGRPHWHU
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WKH SULPH YLFWLPV RI &29,' %XW ZH PXVW
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VHJUHJDWHG IDFLOLWLHV PDGH DJH D VRFLDO
VRXJKW LWV YLFWLPV ,W KDV EHHQ D VRFLDO
FRQVHTXHQFHV

7KLV PRVW UHFHQW VHW RI HYHQWV FRQILUPHG
KDYH DOZD\V KDG D V\PELRWLF UHODWLRQVKLS
YHUVR EXW LW UHPDLQV DQ HPSLULFDO TXHV
LQWHUDFWLRQ WDNHV SODFH LQ SUDFWLFH 5H
DQG WKH JHQHUDO SXEOLF DWWHPSWHG WR PD
WKHP DIWHU 0DUFK 'R FLWLHV VWLOO SD
RXWEUHDNV RI HPHUJLQJ LQIHFWLRXV GLVHDVH
+RZ GR RXWEUHDN UHVSRQVH DQG SDQGHPLF S
SURRI")RU ZKRP"

7KRVH TXHVWLRQV ZLOO EH DQVZHUHG E\ VFK
FRPH DV WKH\ VLIW WKURXJK WKH DVKHV RI
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RI &29,' XUEDQL]DWLRQ WKHVH DUH WKH VV

- :H DOO OLYH LQ DQ XUEDQ VRFLHW\ WKH GL
  RI WKDW XUEDQ VRFLHW\
- WKH XUEDQ LV QRW D FROOHFWLRQ RI GLVW
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- ,Q WKLV XUEDQ ZRUOG ORFDO DQG UHJLRQ
  PRUH WKDQ HYHU DV ERXQGHG IRUPV RI WH
  DUHDV WKDW DUH DOVR FRQQHFWHG WR RWK
  SDUWLFXODU QDWLRQ VWDWH
- XUEDQ VRFLHW\ SURGXFHV QHZ W\SHV RI VR
  UHVSRQVHV IURP DXWKRULWLHV IDU DQG ZLG

,I ZH FRXOG LVRODWH RQH FKDUDFWHULVWLF
&29,' SUHVHQWHG LWVHOI DV WKH GLVHDVH R
LQ LQGLYLGXDO FLW\ UHJLRQV DV PXFK DV DUR
VHH 0XOOLV

*OREDO XUEDQ SDQGHPLF JRYHUQDQFH

7KLV ILQDOO\ OHDGV XV WR WKH TXHVWLRQ KRZ
ZKRVH IDXOW OLQHV ZHUH H[SRVHG E\ &RYLG
JRYHUQDQFH 7R VZLQJ EDFN RQFH PRUH WR W
E\ )LGOHU qWKH ILUVW SRVW :HVWSKDOLDQ SD
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)LGOHU)LGOHUpV DVVHVVPHQW FDPH HD
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DQG WKH 8QLWHG 6WDWHV WKDW ERWK SRVLW
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7KH :+2 KDG LQ IDFW PDGH PLVWDNHV DQG LW
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WKH RUJDQL]DWLRQ KDG EURXJKW LQ VZLIWO\
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RI %UDPSWRQ DQG 0D\RU %RQQLH &URPELH LQ C
IRU WKHLU FRPPXQLWLHV DV WKH SDQGHPLF
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,Q D EULHI FRPPHQWDU\ 5LFKDUG +RUWRQ HG
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LV XVHIXO LQ WKH FRQWH[W RI XUEDQ SUDFWL
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LPSRUWDQW FRQVHTXHQFH RI VHHLQJ &29,'
RULJLQV 7KH YXOQHUDELOLW\ RI ROGHU FLWL]
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WR D WUXWK VR IDU EDUHO\ DFNQRZOHGJHGuQ
RU SURWHFWLYH D YDFFLQH WKH SXUVXLW RI
IDLOr +RUWRQ $V ZH ZRXOG OHDUQ PXFK
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RI YDFFLQH UROORXWV RQFH DYDLODEOH WK
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ELRPHGLFDO LQWHUYHQWLRQV DORQH ZRXOG Q
QHHG WR EH EDVHG LQ VRFLDO DFWLRQ DQG W

&DQ ZH WKHQ VSHDN RI V\QGHPLF SODQQLQJ D

8UEDQ SODQQHUV DQG GHVLJQHUV JUDSSOH Z
XUEDQLVP EH\RQG WKH SDQGHPLF)ORULGD H
EHJLQQLQJ RI WKH SDQGHPLF RQ WKH SRWHQW
.HHVPDDW HW DO :KLOH MXULVGLFWLR
XS EXW LQ WKH SUHVHQFH RI D IRXUWK ZDYH
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RQH HQG DQG WR ZLOG VSHFXODWLRQ DERXW W

,Q OLJKW RI WKH V\QGHPLF OHVVRQV IURP WKH
IRUZDUG DPELJXRXV 7KHUH KDYH EHHQ WKH E
RQ DV RQH UHSRUWHU SXW LW WKDW qZKLOH
FHQWUHV IRU WKH VXEXUEV RU WKH FRQWU\V
ZLOO FUHDWH RSSRUWXQLWLHV IRU \RXQJHU S
:KDW ZH VHH WKURXJKRXW KLVWRU\ DQG ZKD
RI SODFH WKDW \RXQJ SHRSOH KDYH WR JR f
WKDW \RXQJ SHRSOH DUWLVWLF FUHDWLYHV
D \RXQJ SHUVRQ DQG \RX ZDQW WR HVWDEOLV
SHRSOH \RX GRQ W ZDQW WR VLW LQ \RXU SDU
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LQ WKH FXUUHQW FULVLV

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IRU q=RRPWRZVr ZKHUH &29,' JHRJUDSKLHV PD
DJJORPHUDWLRQ RU SULYLOHJH GULYHQ ZRUN

6DVNLD 6DVVHQ WDNHV RIIHUV D GLIIHUHQW W
VWUHVVLQJ WKH ZD\V LQ ZKLFK KXPDQV PXVW E

> $FURVV WKH FHQWXULHV ZH KDYH GRQH YD
> FRQGLWLRQV DQG ILQG EHWWHU ZRUOGV }7
> IHHOV OLNH ZH KDYH QR VSDFH WR UXQ WR
> RSWLRQ LV WR VWD\ LQ VSDFHV VXUURXQGH
> FORVH
>
> $QG \HW WKLV LV D WHPSRUDU\ FRQGLWLRQ
> RI XV KXPDQV ZKRP WKH YLUXV SHQHWUDWH
> $QG IDU WRR PDQ\ GLHG
>
> %XW WKH IDFW WKDW D PDMRULW\ RI XV VX
> EHFDXVH LW WHOOV XV ZH FDQ VXUYLYH LW
> DQG LWV IDLOXUH WR NLOO PRVW RI XV LV
> FDQ KDYH D FKDQFH WR VXUYLYH LW EXW V
> GHYHORSHG ,W GRHV QRW IDOO IURP WKH
> QHHG WR SURWHFW RXUVHOYHV DQG ZKHQH
> RU KHOS WKRVH ZKR DUH DW ULVN DQG GR
> PLQGOHVV 6DVVHQ

,Q WKH HQG WKH SRVWSDQGHPLF FLW\ FRQIUR
DIIHFW WKH ERG\ SDQGHPLFV DIIHFW WKH ERG
&DQDGLDQ PDJD]LQH 7KDW ERG\ SROLWLF WRG
KDV SURPSWHG VRPH H[SHUWV WR FDOO IRU q
$FXWR HW DO

7KURXJK WKLV OHQV WKH V\QGHPLF UHDOLWLH
)HLQ KDV ZULWWHQ DERXW 1HZ <RUN &LW

SODFH LQ ERWK KLVWRULFDO DQG JHRJUDSKL
RI FODVV DQG UDFH LQ WKH FLW\

> 7KH YLUXV KHOG XS D PLUURU WR WKH FLW
> IURP WKDW RI D JOHHIXO HOHJDQFH DQG VV
> XUEDQ ODQGVFDSH GLYLGHG EHWZHHQ WKR
> GHSDUW DQG WKRVH ZKR KDG QR FKRLFH EX
> DV WKH YLUDO ZDYH FUHVWHG =LS FRGH P
> %URQ[%URRNO\Q DQG 4XHHQV FRPSDUHG
> VWRU\ :KHQ *HRUJH)OR\G ZDV NLOOHG LQ
> WR PDJQLI\ WKH YXOQHUDELOLW\ UDFLVP
> 1HZ <RUN OLNH PDQ\ RWKHU SODFHV LQ WK
> LQ SURWHVW

}%H\RQG WKH UHYHDO

,W EHFDPH IDVKLRQDEOH GXULQJ WKH SDQGHP
YLUXV ,W VKRZHG XV WKH FUDFNV RI WKH XUE
IURP GLVHDVH DW OHDVW LQ WKH :HVW <HW
DW WKH VDPH WLPH ,W GRHV QRW DFW RQ LW
YLUXV EH SROLWLFDO ZH KDYH WR EH SROLWL
WR DVN IRU WKH FKDQJH ZH ZDQW DQG QHHG
XV WR IRUJHW WKDW WKH VSDWLDO JUDPPDU R
WKH FLW\ $QG WKH V\QGHPLF QDWXUH RI WKH
RI SHUPDQHQW DQG ULVLQJ ULVN LQ WRGD\pV

7KHUH DUH QRZ VKDGHV RI DGDSWDELOLW\ :L
WKLV TXHVWLRQ WKRVH RI XV LQ WKH :HVW L
FRQWLQXH WR OHDUQ IURP HOVHZKHUH q,QVW
WKH SDQGHPLF KDV SURGXFHG ZH XUJH D IRF
D ZD\ RI XQGHUVWDQGLQJ WKH SDQGHPLF DQG
SURFHVVHV DQG H[SHULHQFHV r

%KDQ HW DO

%LEOLRJUDSK\

$FXWR 0 /DUFRP 6 .HLO 5 HW DO 6HHLQJ &29,'

1DWXUH 6XVWDLQDELOLW\ KWWSV GRL RUJ V

%DVFDUDPXUW\ 'DNVKDQD 9UXQGD %KDWW DQG)UHG /X
FRPPXQLW\ H[SODLQV &DQDGDpV &RYLG FULVLV OLNH Q
WKHJOREHDQGPDLO FRP FDQDGD DUWLFOH O S EUDPSWRQ

%KDQ * &DOGHLUD 7 *LOOHVSLH . 6LPRQH $
FROOHFWLYH OLIH (QYLURQPHQW DQG 3ODQQLQJ ' 6RFLH
WKH SDQGHPLF VRXWKHUQ XUEDQLVPV DQG FROOHFWLYH

%LJOHUL 6DPDQWKD /RUHQ]R 'H 9LGRYLFK 5RJHU .H
5HSRVLWLRQLQJ &29,' DW WKH VRFLDO DQG VSDWLDO

%ROO\N\ 7KRPDV 7KH)XWXUH RI *OREDO +HDOWK ,V
KWWSV ZZZ FIU RUJ DUWLFOH IXWXUH JOREDO KHDOW

&RQQROO\ & .HLO 5 $OL 6 + ([WHQGHG XUED
'HPRJUDSKLF FKDQJH LQIUDVWUXFWXUH DQG JRYHUQDQ
RUJ

(OVFKHVKWDZ\ <DVVHU o%XLOG %DFN %HWWHUp RU
3DUDGLJP LQ WKH $UDE :RUOG DQG %H\RQG %XLOW (QYU

)DLUV 0DUFXV 1R HYLGHQFH WKDW XUEDQ GHQVLW
GH]HHQ 1RYHPEHU KWWSV ZZZ GH]HHQ FRP FR
ßRULGD

)ORULGD 5LFKDUG $QGUÆV 5RGULJXH] 3RVH DQG 0LFKDH
6WXGLHV '2,

+RUWRQ 5LFKDUG q2IßLQH &29,' ,V 1RW D 3DQGHP

.HHVPDDW -HQQLHU .ZDPH 0FNHQ]LH 5LFKDUG)ORULGD
*OREH DQG 0DLO 0D\

/HZVHQ 6LPRQ 7KH 6SDQLVK)OX 5HZURWH +LVWRU\
-XO\ KWWSV WKHZDOUXV FD WKH VSDQLVK ßX UHZURW

/RX (WKDQ :K\ :HpUH 6R %DG DW 'LVDVWHU 3ODQQLQ
ZK\ ZHUH VR EDG DW GLVDVWHU SODQQLQJ

1DVVHU 6KDQLID %UDPSWRQ KDV HPHUJHG DV RQH
FDXWLRQ RQ ZKHUH WR OD\ EODPH &%& 1HZV 6HSWHPEH

KWWSV ZZZ FEF FD QHZV FDQDGD WRURQWR EUDPSWRQ F

1XFFLWHOOL 'DQD 7KH VWDJHV RI FOLPDWH GHQLD
6HSWHPEHU KWWSV ZZZ WKHJXDUGLDQ FRP HQYLURQ
FOLPDWH FKDQJH FRQWUDULDQV VWDJHV GHQLDO

3KLOOLSV)HLQ .LP 7KH 0HWDPRUSKRVLV 7KH 1DWL
VRFLHW\ VDYLQJ DPHULFDQ FLWLHV OL]DEHWK FRKHQ

5DWOLII (:H &DQ 3URWHFW WKH (FRQRP\ )URP 3DQ

:LUHG -XQH KWWSV ZZZ ZLUHG FRP VWRU\ QDWKDQ Z

5REHUWV 6LREKDQ 7KH 6ZLVV &KHHVH 0RGHO RI 3D
KWWSV ZZZ Q\WLPHV FRP KHDOWK FRURQDYLUXV

6DED 5RVD 'RZQWRZQ SXW WR WKH WHVW 7RURQWR

6DVVHQ 6DVNLD 7KH FLW\ DQG WKH YLUXV 6KDSH
VDVNLD VDVVHQ FULVLV FRURQDYLUXV

6FKZHL]HU 3LD -RKDQQD DQG 2UWIULHG 5HQQ *RYH
PLWLJDWLRQ 'LVDVWHU 3UHYHQWLRQ DQG 0DQDJHPHQW
RUJ '30

6PLWK /LOO\ o=RRP WRZQVp DUH H[SORGLQJ LQ W
IDVWFRPSDQ\ FRP]RRP WRZQV DUH H[SORGLQJ LQ

6SHOOEHUJ % 7D\ORU %ODNH % 2Q WKH H[RQHUDWLR
,QIHFW 'LV 3RYHUW\ KWWSV GRL RUJ

6WRQH /DXUD &29,' KDV EURXJKW 3DWULFN %URZ
DQG 0DLO 0D\ KWWSV ZZZ WKHJOREHDQGPDLO FRP F
EDFN WR SURPLQHQFH LV DOO IRUJLYHQ

7D\ORU = - 7KH UHDO HVWDWH ULVN IL[5HVLGH
PHWURSROLV (QYLURQPHQW DQG 3ODQQLQJ $ (FRQRP
RUJ ;

7KH /DQFHW 0LFUREH (GLWRULDO &29,' ZH ZLOO
0LFUREH 2FWREHU '2, KWWSV GRL RUJ 6

0XUDW ¹ÄRùOX 5RJHU .HLO DQG 6H\IL 7RPDU &RQW
WKH *UHDWHU 7RURQWR $UHD %XLOW (QYLURQPHQW
EHQY

:+2 &LWLHV DQG SXEOLF KHDOWK FULVHV UHSRUW
/\RQ)UDQFH KWWSV ZZZ ZKR LQW SXEOLFDWLRQV L LW

:ROI 0HLNH ,V WKHUH UHDOO\ VXFK D WKLQJ DV qRO
IURP WKH SHUVSHFWLYH RI FXOWXUDO DQWKURSRORJ\ 6

KWWSV GRL RUJ M VRFVFLPHG

:ROI 0HLNH 5HWKLQNLQJ XUEDQ HSLGHPLRORJ\ 1D
-RXUQDO RI 8UEDQ DQG 5HJLRQDO 5HVHDUFK

<DQJ -HQQLIHU .DWH $OOHQ 5DFKHO 0HQGOHVRQ DQG $
FLW\pV QRUWKZHVW FRUQHU KDV EHHQ oIDLOHG E\ WKH V\
JWD WRURQWRV FRYLG GLYLGH WKH FLW\V QRU

<RQJ (G +RZ 3XEOLF +HDOWK 7RRN 3DUW LQ ,WV 2ZC
WKHDWODQWLF FRP KHDOWK DUFKLYH KRZ SXEOLF K

=DLURQJ ; &29,' RQ WKH HSLVWHPLF FRQGLWLRC

KWWSV ZZZ RSHQGHPRFUDF\ QHW HQ FDQ HXURSH PDNH

9LUÙVÙQ ³WHVLQGH 5LVN YH %$UD W UPD YH 3ODQODPD

5RJHU .HLO

¤HYUHVHO YH .HQWVHO 'HùL LP)DNÙOWHVL <RUN ¹

*LUL

3DQGHPL GHQH\LPL EL]OHUH JÓVWHUGL NL EL]
NDU \D NDOG ù P] NHQWVHO ELU GÙQ\DGD \D
EHOLUVL]OLNOHUOH GROX ELU GÙQ\DGD \D \R
HNLOOHQGLUHQ NHQWVHO \D DP SUDWLNOHU
(WKDQ /RXpQXQ JÓ]OHPOHGLùL JLEL NHQWVHO
NDUPD NO N JHWLUPHNWHGLU q$UWDQ NDUPD
HQ VHUW X\DU ODU \OD JHOHQ KHU DQ JHUÄH
$QFDN 1LMHU\D $PHULNDO \D]DU 7HMX &ROHp
DÄ V VRUXQVDO RODELOLU q.RUXQDNO ELU
EL]OHU DIHWOHUH NDU WDPDPHQ KD] UO NV]
NRUXQDNO GÙQ\D WDELL NL GH GÙQ\D KDONO
EDKVHGLOHQ EX NRUXQDNO GÙQ\D q%DW r RO
ROPD Ó]HOOLùL WD \RU r %X GHQH\LP \HOSD]H
\HULQH qSDQGHPL oÓQFHVLp YH oVRQUDV p R
YH oNUL]p LOH oJÙQGHOLN KD\DW Qp EX NDGD

GÙQ\DODU QD EDNPDP] NRQXVXQGD VUDU HWP
RODUDN WDVILU HGLOHQ LVH Dù U EHNOHQPHG
ÓOÄHNOL VSHNÙODV\RQODU Q YH EDù QW O UL
\HUOHUGLU r %KDQ HW DO $VO QD EDN\
HWNLOH\HQ WHN \D GD HQ EÙ\ÙN NUL] ROPDPD
PHYNLLQH GDKL JÓUÙQÙU HNLOGH D\U P GXU

'ROD\ V \OD EX N VD EÓOÙPGH \DSW ù P JLEL
VRUPDN ID\GDO RODELOLU 1H GHùL WL" .HQW
URO R\QDG \D GD GDKD GRùUXVX ÓQFHVL YH V
NDEXO HGHUHN LPGL KHU \HUGH PÙGDKDOHG
PX" $\U FD SDQGHPLQLQ EHUDEHULQGH JHWLUG
ÓWHVLQGH QH ROGXùXQX VRUX\RUX] YH JÓUH
ROGXùXQX LOHUL VÙUÙ\RUX]

$FLO 'XUXPODU YH 5LVNOHUOH 'ROX .HQWVHO

6FKZHL]HU YH 5HQQ ULVN WHKOLNHOHU
ÄDO PDGD q7HKOLNHOHU GRùDO ROVD GD DIH
LNLQFL \DU V QGD ELU QRNWDGD 7 S GHUJLVL 7
KDOH JHOGL 7KH /DQFHW 6$56 &R9 QL
ÓQOHPOHULQ NDO F ROGXùX NRQXVXQGD LQVD
JHOGLùLQL YH \HQL QRUPDOLQ EX ROGXùXQX
\D DG ù NDO F NUL]OHU NDYUDP Q JHQL OHWP
HKLUOHULQGH \HQL QRUPDO RODUDN JÓUÙQH
KHU]DPDQ QRUPDO ROGXùXQX VÓ\OH\HLOLUL
JH]HJHQVHO NHQWVHO WRSOXPXPX]GDNL WÙP
VLVWHPOHUL NXUXPVDOOD P KDON VDùO ù Y
]HQJLQ HKLUOHULQGH ELOH LÄ LÄH JHÄPL GX
KDVWDO N WDUDI QGDQ KDUDS HGLOGL <D DG
WRSOX WD PD\D EDù PO O N D U NDODEDO N
YE JLEL ULVN IDNWÓUOHULQLQ ELUOH WLùL EL
HWNLOHQGL YH ED ODQJ ÄWD \DYD YH\D JHFLNL
YH /XP

&RYLG SDQGHPLVL V UDV QGD ELUÄRN NL LQ
EX JÓ]OHPL VLVWHPLN ULVN NDYUDP QD \RO D
EXQODU GHùL NHQ VRV\DO NRQXPODU YH\D H
ROPD\DQ HNLOGH PDUX] NDOG ù DIHWOHUL N
WVXQDPLOHUL WHWLNOH\HQ GHSUHPOHU EL\P
KDVWDO ùD QHGHQ ROPDV YH ÄRNOX DQWURSI

%X WÙU ELOH LN YH EDVDPDNO GXUXPODUGI
NDU OD W ù P] RUWD\D Ä NDQ VLVWHPLN ULV
GRùDODU JHUHùL V Q U ÓWHVL YH NÙUHVHOGL
LOL NLOHU JÓVWHULU GRùUXVDO GHùLOGLU YH
\DQ W SRWDQVL\HO \ N F HWNLOHUL\OH LOJL
PX]GDULSWLU 6FKZHL]HU YH 5HQQ

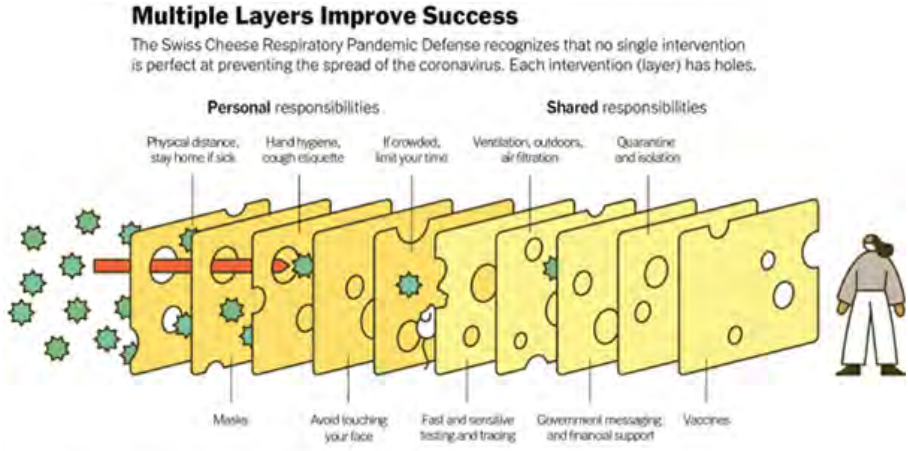
'DKD GD ÓQHPOLVL EHOHGL\H ÄDO PDODU DÄ
Ä NDQ EXOD F KDVWDO NODU Q HNRQRPLN LO
LÄLQ KDVWDO N PRGHOOH\LFLOHULQLQ YLURO
NXOODQDQ VLJRUWD HQGÙVWULVL WDUDI QGD
\ OO N VHO YH\D GHSUHP WDKPLQOHUL JLEL
EXOD F KDVWDO N GÙQ\DV QGD NDU O N EXO
qNRUNX NDWDORùXr RLDUDN WDQ PODG ù q'X\J
SDQGHPLOHUH NDU EDKLV R\QDPDN HKLU SO
PDQLSÙOH HWPH\L LÄHUHQ ELU SODQODPD R\XO

q6LJRUWD EDùODQW O PHQNXO N \PHWOHU ,
ELULNLP GÙ]HQLQL LNOLP ULVNLQGHQ NRUXPD
LNOLPVHO DFLO GXUXPODUGD VLJRUWD ULVNL
YH VL\DVDQ Q GDKD JHQHO ELU Ó]HOOLùL KDOL
%Ù\ÙN ÓOÄÙGH $%' YH $YUXSDO NXUXPVDO \DV
VLJRUWDF ODU LÄLQ VLJRUWD\D GÓQÙ WÙUÙOÙ
RSHUDV\RQ WDU] Q Q SDQGHPL VRQUDV QGD H
Ù]HULQGH GH HWNLOHUL RLDFDNW U

%HQ]HU HNLOGH LQNDU NHQWVHO KDON VDùO
KDOND LOHWPHGH NDU OD W ù ELU VRUXQ RO
PHVDIHOHU JLEL LQVDQODU Q]LKQLQGH WD]H
QHGHQ RLDQ GHQH\LPOHUOH ELU SDQGHPL VP
GHùL LNOLùL\OH LOJLOL RLDUDN ELOLP DGDPO
VÓ] HWWLOHU 6RUXQXQ 9DU 2OGXùXQX 5HG
%LU 6RUXQ 2OGXùXQX 5HGGHW ¤Ó]HLOHFH
QNDU VÓ\OHPOHULQH Ó]HO YH NDPXVDO
VLVWHPDWLN ELU NDPSDQ\D\OD NDU Ä N OPD
ELU PÙGDKDOHQLQ NDUPD NO ù Q YH ELU VR
ÓQOHPOHULQ X\JXODQPDV \OD NDU Ä N OPDO
VDOJ Q Q Q ED ODU QGD DODQ QGD X]PDQODU
PRGHOLQLr ELU YLUÙVÙQ QHGHQ ROGXùX VROX
.HQWVHO H\OHP \HUHO KDON VDùO ù YH NHQW

GDYUDQ WH YLN HWPHGH KHP GH SD\OD ODG
HWNLQOH WLUPHGH D Dù GD GD JÓUÙOHELOHFH

.HQWOH PH YH +DVWDO N 1H 'HùL WL"



Source: Adapted from Ian M. Mackay (virologydownunder.com) and James T. Reason. Illustration by Rose Wong.

HNLO VYLÄUH 3H\QLUL 0RGHOL 7KH 6ZLVV &

+LM\HQLN \Ù]\ O Q PLUDV 0RGHUQOH PH YH .DG

%LUL W EEL YH GLùHUL NHQWVHO DQODPGD
PLUDV EXJÙQ KDOD ÓQHPLQL NRUXPDNWDG U .
KHU LNLVL\OH GH LOJLOHQL\RU ³]HOOLNOH
PHVOHùL ELQOHUFH \ OG U LQVDQO ù Q ED QD
ÙVWÙQH]DIHU LODQ HWWL $\Q]DPDQGD GÙQ
ÄRùXQOXNOD N UVDO YH WDU PVDO DODQGD \D
\D D\DFDù P] YDUVD\ P QD \RO DÄW

ON RODUDN W EEL DUD W UPD YH LQRYDV\RQX
YDUVD\ P YDUG $%')HGHUDO +ÙNÙPHWL .DPX
KLÄELU]DPDQ EXOD F KDVWDO NODU Q RUWDG
ELUOLNWH GD X LIDGHOHUL NXOODQG q>f
HWPHN LÄLQ PLNUREL\RRML DUDÄODU HSLGH
JHOL WLULOGL >f@ ELU ELUH\GH YH\D WRSOX K
JHOL WLULOGL YH X\JXODQG >f@ YH LQVDQO N
VDùO N]LUYHVLQH XOD PDG >f@r 6SHOOEHUJ
NDU DUWDQ JÙYHQGH ROPD KLVVL WRSOXPXQ
PÙFDGHOH HWPH KD] UO ù Q]D\ ßDWW \Ù]

FHVXUFD L\LOH WLUHQ ELU X\JXODPD RODUDN
GD WHUN HWPL YH HWNLQOLùL qVDùO ù Q UHK

NLQFL RODUDN D\Q]DPDQGD W EEL KÙQHU K
GÙQ\D NHQGLVLQLQ EÙ\ÙN EÓOÙPÙQÙQ NHQWV
ON RODUDN GH +HQUL /HIHEYUH WDUDI QGD
qWDPDPHQ NHQWVHO ELU WRSOXPr LÄLQGH qWD
DUW N GRùUXOD\DELOLUL] /HIHEYUH VRQ
&RYLG SDQGHPLVLQLQ GÙQ\D\ VDUPDV
EHOLUWWLùL JLEL qNÙUHVHO VDùO ù Q JHOHP
R]DPDQNL N VD PDNDOHVLQL NODVLN 7KH 'HD
ÓQJÓUÙGH EXOXQDQ -DQH -DFREV XQ Ó]OÙ ELU
KDVWDO NODU Q HQ ÄDUHVL] YH KDUDS NXUED
JHOGLOHU r %ROO\N\ GDQ DO QW ODQP W

6RQUDNL \ OODUGD EXOD F KDVWDO NODUGD
EX WÙU KDVWDO NODU Q \D\ OPDV QD NDU H
KLSRWH] GH LQVDQODU Q \D DPODU Ù]HULQGH
ODU Q VRQXQGD OHULQ ED QGD RUW
WDVDYYXU HGLOPHVL JHUHNHQ NR XOODU Q E
(EROD 9LUÙVÙ +DVWDO ù 6$56 HWNLVL DOW
GHùHUOHQGLUPHN YH KHP GHùL HQ KDVWDO N
GHùL HQ NHQWOH PH PDQ]DUDODU Q JHQL OH
ELÄLPOHUL KHVDED NDWDQ \HQL ELU qNHQWVH

*HQL OHWLOPL HKLUGH .HQWVHO 3ROLWLN 3D

&RYLG SDQGHPLVL ÓQFHVL RQ \ O ER\XQFD N
ELU ÄDO PDGD VHKLUFLOLNWH EDQOL\ÓOH PH
GDKLO ROPDN Ù]HUH PRGHUQ JHQL OHWLOPL
KDVWDO NODUD NDU VDYXQPDV]O ù SRWDQV
EXOD F KDVWDO N EDùODQW QRNWDV QGD R
VRV\R PDWHU\DO GÓQÙ ÙPOHUOH GL\DOHNWLN
JUXS WHVSLW HGHELOGLN GHPRJUDILN GHùL L
JHOL PHOHULQ PHUNH]LQGH \HU DOG ù Q VDSV
LOL NLOHULQL JHQHO ELU GHQH\LP KDOLQH JH\
Ä NDQ ÄH LWOL EXOD F KDVWDO N ROD\ODU
NHQWOH PHQLQ EXOD F KDVWDO NODU Q \D\
RUWD\D NR\GX %X QHGHQOH JHQL OHWLOPL
VDOJ QODU YH EX WÙU ULVNOHULQ KDILßHWL
GLNNDW HWPHN LÄLQ YH VDùO N YH KDVWDO ù
LÄLQ ÄDùU GD EXOXQGXN &RQQROO\ YH GLùHU

%X GHùL HQ NHQWVHO SROLWLN SDWRORML LP
'ÙQ\DV QGDr \D DG ù P] KLSRWH]LQL RUWD\D NR
ÓQHP ND]DQDQ 7HN 6DùO N 7HN 'ÙQ\D NDPSDQ\I
WÙUOHU DUDV NDU OD PDODU Q DUWDQ HNRC
RUWD\D Ä NPDV Q Q \DUDWW ù NDUPD NO ùD
VRV\DO NÙOWÙUHO YH SROLWLN VÙUHÄOHUGH
GÙQ\DQ Q DUWDQ NHQWOH PHVLQLQ YH EX VÙUH
:ROI

\Ù]\ O Q LON \LUPL \ O QGDNL MHRSROLWLN \
NHQWVHO \RùXQOD PD YH \D\ OPD VÙUHÄOHUL\C
NHQWVHO FRùUDI\D\ \DQV W \RUGX %UHQQHU
.DQDGD Q Q ÄRùXQX HWNLOH\HQ LGGHWOL $NX
VDOJ Q Q Q NXUEDQODU Q Q ÄRùXQX EXOGXùX
HNRQRPLQLQ G LVNHOHWLQL DÄ ùD Ä NDUG ù
7RURQWR QXQ XOXVODUDUDV NRQWURO PHUNH
\D DP WHKGLW HGHQ K]O YH \ N F ELU VDOJ
FLGGL ELU X\DU JÓQGHUHQ EX KDVWDO N Dù C
(NRQRPLN YH NÙOWÙUHO ELU IHQRPHQ R
GHQH\LPOHQPH\HQ JHUÄHNOLN RODQ ELU KD\DC

6DGHFH \ OGD L OHU ÓQHPOL ÓOÄÙGH GHùL \
QHGHQ RODQ YLUÙV RODQ 6$56 &R9 NDUD
PHVDIH LOH VRQXÄODQDQ EHQ]HUL JÓUÙOPHPL
6DùO N ³UJÙWÙ QÙQ KDVWDO ù SDQGHPL LODQ
ED OD\DQ NLWOHVHO D ODPD \ROXQXQ K]O E
ED ODU QGD GÙQ\D ÄDS QGD ELU HWNL\H VDKLS
ÓOÙPH VHEHEL\HW YHUGL &RYLG NÙUHVHO
YH EX RQ \ OGDQ ELUD] GDKD X]XQ ELU VÙUH
\RùXQ YH NDSVDPO ELU HNLOGH NÙUHVHOOH
qDUW EÓOJHr KLQWHUODQW GHùLO NDSLWDOL
JD]HWHFLQLQ X JÓ]OHPLQGH DÄ NÄD JÓUÙOGÙ
q:XKDQ VDOJ Q Q JHUÄHN PHUNH] ÙVVÙ ¤LQ N
ÙUHWLP]LQFLULQLQ \HQL NH IHGLOHQ LÄ EÓOJ
HGLOPL WL

.DSLWDOLVW HUL LPLQ NHQWVHO PHNDQGD JHQ
\RN HGLOPHVL YH K]ODQG U OP KDUHNHWOLOL

K]ODQP EDùODQW \ROODU N VDOP W U
HQGÙVWULVL \ OGD PLO\DUGDQ D] \ROFX WD
ELQGLùLQGH EX VD\ PLO\DUD \ÙNVHOPL WL
DLUOLQH LQGXVWU\ SDVVHQJHU WUDIILF JORE

+DVWDO N DWDV RODQ 6$56 WD ED ODQJ ÄW
0LODQR 0DGULG /RQGUD YH 1HZ <RUN \HU D
PHUNH]LQGH D U GHUHFHGH \RùXQOD UNHQ
NHQWOH PH JHUÄHNOLùLQLQ \D\J Q KDVWDO ù
VRQUDNL SDQGHPLQLQ ND\QDN EXOD PD VDOJ
QDV O LQ D HGLOHFHùLQL EHOLUOHGL %X JHQ
GDLU JHQHO LQDQ ODU P]OD LOJLOLGLU YH
ZRUOG SRSXODWLRQ ZRUOG SRSXODWLRQ E\ \H
EDU QG UDQ NHQWVHO DODQ Q WDPDP QGD \
]D\ I HQ PDUMLQDO YH ÄHSHUGHNL WRSOXOXN
XQ ED O FD NXUEDQODU RODUDN ELOL\RUX]
ILQDQVH HGLOHQ D U NDODEDO N NÓWÙ WD
NRQXVXQGDNL WRSOX NDUDU P] \D YLUÙVÙQ
ROJX GHùLO VRV\DO ELU ROJX KDOLQH JHWLUG
ELU ÄHSHUOH PH ROGX

%X HQ VRQ ROD\ODU GL]LVL HKLUOHULQ YH EX
VDKLS ROGXùXQX \HQL \ROODUOD GRùUXODG
DQFDN KHU \HQL VDOJ Q ROD\ QGD EX WÙU ELU
ELU VRUX RODUDN NDO \RU %LOLP LQVDQODU
K]O GHùL LNOLNOHUL DQODPODQG UPD\D ÄDO
ELU VDùO N FH]DV P ÓGÙ\RU"r q.HQWOH PH
QHGHQ ROGX"r q3DQGHPLOHU VDUVG ù QGD \R
YH SDQGHPL KD] UO ù QDV O ÄDO U"r q HKL
LÄLQ"r RODUDN JÙQGHPH JHOGLOHU

%X VRUXODU JHOHFHN \ OODUGD GÙQ\D HKLU
ELOLP LQVDQODU YH X\JXOD\ F ODU WDUDI QG
GÓQHPL YH ELÄLPL GL\H ELU H\ YDUVD NDUDN

s +HSLPL] ELU HKLU WRSOXPXQGD \D \RUX] V
R HKLU WRSOXPXQXQ LÄLQGHNL KDVWDO NODU

s .HQW IDUNO NDVDED YH HKLUOHUGHQ ROX
YH NHQWVHO \D DP Q WDOHS YH LKWL\DÄODU
ELUELULQH EDùODQDQ ELU GL]L \DS O VRV\DO

s %X NHQWVHO GÙQ\DGD \HUHO YH EÓOJHVHC
NRQXPODU QGDQ EDù PV] RODUDN EX WÙU GLù
DOPD YH \ÓQHWLP DODQODU ELÄLPOHUL RODU
NRUXPDNWDG U

s .HQW WRSOXPX KHU \HUGH \HWNLOLOHUGHQ
VL\DVHW ÙUHWLU

%X HYUHQVHO JÓUÙQWÙGHQ ELU Ó]HOLùL D\
GÙQ\DQ Q KHU \HULQGH ROGXùX NDGDU ELUH\V
NXUXPVDO ÄHYUHQLQ KDVWDO ù RODUDN VXQP
ELU HOH WLUL LÄLQ EN] 0XOOLV

.ÙUHVHO .HQWVHO 6DOJ Q 3DQGHPL <ÓQHWLPL

%X QLKD\HW EL]L ID\ KDWODU &RYLG WDUD
]RUOXNODU \OD YH NÙUHVHO SDQGHPLN NHQW
VRUXVXQD JÓWÙUÙ\RU \ O QGDNL 6$56 GHQ
6$56)LGOHU WDUDI QGDQ qLON :HVWSKDOLD VR
t '6³ LOH ELUOLNWH NÙUHVHO VDùO N GÙ]HQOH
\ÓQHWL LP SDWODG D\Q \D]DU &29,' X EL
JHUL GÓQGÙ)LGOHU)LGOHU LQ GHùHUOH
JHOGL YH NHQGLOHULQL '6³ QÙQ VDKLS ROPDV
NRQXPODQG UDQ GÙQ\DQ Q LNL EÙ\ÙN VÙSHU
RYHQLVW GXUX XQD DW IWD EXOXQGX

$VO QGD '6³ KDWODU \DSW YH EX LNL VÙSHU
ÓUJÙWÙQ 6$56 WDQ VRQUD K]OD JHWLUG
NÙUHVHO ELU SDQGHPL\H \DQ W YHUPHGH NDW
GD HKLUOHU YH +DON 6DùO ù .UL]OHUL Ù
\ÓQHWL LPL ÄHPEHULQH VRNPD\D \ÓQHOLN]D\
NHQWVHO VWUDWHML LOH &RYLG XQ]RUOXNO
NDQ WOD\DPDG :+2

<LQH GH HKLUOHU YH EÓOJHOHU &29,' DQ
PHUNH]LOH PL XOXV GHYOHWOHUGH ELUÄRN PH
YXUGXùX \HQL NHQWOH PL ÄHYUHOHU \DOQ]FD
Ó]HO LKWL\DÄODU LOH LOJLOL \HQL WÙU SDQ
QLQ VRQODU QGD LQ ED ODU QGD Ó]H
WRSOXOXNODU WHKGLW HGHQ HQIHNVL\RQ GD
RODQ VDùO N KL]PHWOHUL LÄLQ V FDN QRNWD

ÄDW PDODU \D DQG

%UDPSWRQ YH 0LVVLVVDXJD Q Q EDQOL\Ó RGDI
VDKLS 7RURQWR EÓOJHVLQLQ EDW ÄHYUHVLQG
VRV\DO PHNDQVDO YH NXUXPVDO ÄHYUHOHULQ
YH GLùHUOHUL 3DQGHPL WRSOXOXNODU
YH VDùO N KL]PHWOHUL YH DFLO PÙGDKDOH JL
RUWD\D Ä NDUG ù LÄLQ %UDPSWRQ %HOHGL\H
%D NDQ %RQQLH &URPELH WRSOXOXNODU LÄL
D] WHVW PHUNH]L GDKD D] WHVW GDKD X]XQ
6WRQH %UDPSWRQ EÓOJH VDNLQOHU
L OHUH EDù PO O ù NHQWLQ NDP\RQ WD PDF
NDOPDV EÙ\ÙN JÓÄPHQ QÙIXVXQXQ X]DN \HU
EDùO O ù YH JÓÄPHQ WRSOXOXNODU QGD ÄRN
GROD\ EÓOJHQLQ VDYXQPDV]O ù Q JÓVWHUG
WDYXN L OHPH WHVLVL YH (\OÙO GH NRP X 0LV
L \HUOHULQGHNL VDOJ QODU EDQOL\Ó WRSOXC
JÓVWHUGL %XQXQOD ELUOLNWH %UDPSWRQ G
\D DP YH GLDVSRUD VH\DKDWL JLEL LGGLD HG
GDù W F YH UNÄ RODUDN UHGGHWWLOHU YH
NR XOODU Ó]HOOLNOH \DS VDO \HWHUVL] ILQ
YXUJXODPD\D ÄDù UG ODU 1DV U $QFDN E
\Ù]\ O Q LNLQFL \DU V QGD HKULQ EDQOL\Ó
QÙIXVXQ ÄRùXQOXùXQD HY VDKLSOLùL \DSDQ \
PÙVWDNLO HYOHULQ ELU NDU P RODQ qLÄ ED
SDQGHPLGH EHNOHQWLOHULQ ÙVWÙQGH WHPVL
ÄHYUHVLQGHNL GDKD JÙYHQOL RUWD V Q I PDK
DQOD OPDG <DQJ YH GLùHUOHUL

2UWD\D ¤ NDQ Q ³WHVLQGH 6LQGHPLN .HQWOH

. VD ELU \RUXPGD 7 S GHUJLVL 7KH /DQFHW LQ
YHUPL ROGXùX N VD ELU GHPHÄWH X]PDQODU
ND\EROPD\DFDù Q DQODG ù QGDQ GHYDP HGH
\DNOD P ÓQHUGL %X \DNOD P SURJQR] WH
EL\RORMLN YH VRV\DO HWNLOH LPOHUL RUWD\
EDùODP QGD ID\GDO G U q&29,' X ELU VHQG
VRV\DO NÓNHQOHULQLQ DOW Q ÄL]PHNWLU <D
D] QO N HWQLN WRSOXOXNODUD YH JHQHOOLN
RODQ NLOLW L ÄLOHUH LPGL\H NDGDU DQFDN

WHGDYL QH NDGDU HWNLOL ROXUVD ROVXQ YH\
D WDPDPHQ EL\RPHGLNDO ELU ÄÓ]ÙP DUD\
GDKD VRQUD ÓùUHQHFHùLPL] JLEL EL\RPHGLND
ELUOH WLULOPHVL D\Q]DPDQGD KHP WHN W
\HULQGH GDKD JÙÄOÙ YH]HQJLQ QÙIXVODU GH
VXQXOPDV Q Q HWNLQOLùLQL DQODPDN LÄLQ J
EL\RPHGLNDO PÙGDKDOHOHULQ HQIHNVL\RQODU
GHùL LP LÄLQ VRV\DO H\OHPH YH VL\DVL LUDGH

2 +DOGH 6LQGHPLN 3ODQODPD YH 7DVDU PGDQ

HKLU SODQF ODU YH WDVDU PF ODU SDQGHPL
Ä NW ODU \OD ERùX X\RU)ORULGD YH GLùHUO
SRWDQVL\HO NDWDOLWLN HWNLOHUL NRQXVXQ
.HHVPDDW HW DO VRQEDKDU QGD WU
VÙUHFLQGH\NHQ GÓUGÙQFÙ ELU HQIHNVL\RQ G
NDSVDPO ELU KDO DOG %X GXUXP ELU XÄWD
JLUL LPOHULQGHQ GLùHU XÄWD NHQWVHO JH
ÄH LWOLOLN JÓVWHUPHNWHGLU (OVKHVKWDZ\

NL YHED \ O QGDNL ROD\ODUGDQ Ä NDU ODQ VH
%X VÙUHÄWH GHVWHNOH\LFLOHU ROGX 5LFKDU
YH \D O LQVDQODU SDQGHPL VRQUDV QGD HKL
WHUN HGHELOLUNHQ D\U OPDODU JHQÄ LQVDQ
)DLUV ³]HOLNOH 7DULK ER\XQFD YH X
JLWPHVL JHUHNHQ WÙUGHQ \HUOHU ROGXùXGXU
YH VDQDWVDO \DUDW F ODU WDUDI QGDQ JHUÄI
(ùHU JHQÄVHQL] YH NDUL\HULQL]L NXUPDN LVWL
VRQVX]D NDGDU DQQH EDEDQ] Q ERGUXPXQGD
\DUDW F ODU Ó]HOLNOH JHÄWLùLPL] \Ù]\ OGD
YH PHYFXW NUL]GH GH Ó\OH RODFDNODU

%XQXQOD ELUOLNWH JHOHQHNVHO RILV PHUNH
NDPXVDO DODQ \D DP QGD ELOH \RùXQOXNWD J
YH L\LOH PH \DYD NDOG ù QGDQ HKLU LÄL FD
NRUX\RU ³UQHùLQ 7RURQWR QXQ ILQDQV EÓG
\Ù]GH D]DOP GXUXPGD 6DED $QFDN D
3DQGHPLQLQ 7RURQWR GDNL NRQXW SL\DVDOD
q&RYLG XQ 2QWDULR HNRQRPLVLQLQ EDùO
LQ D HGLOHQ HNRQRPLN EÙ\ÙPH PRGHOLQL NHV
8FRùOX YH GLùHUOHUL %D] ODU &29

HGLOHQ GDù OPD YH\D D\U FDO N RGDNO L \D
WH]DKÙU HWWLùL q=RRPWRZQVr LÄLQ NDÄ \RU

6DVNLD 6DVVHQ LQVDQODU Q L\LOH PHVLQLQ
SDQGHPL VRQUDV NHQWVHO GXUXPD IDUNO E

<Ù]\ OODU ER\XQFD ROXPVX] NR XOODUGDQ
LÄLQ EÙ\ÙN JÓÄOHU \DSW N %XJÙQÙQ NRU
\RNPX JLEL KLVVHWWLUL\RU YH NDÄDPD\ ]
EÙ\ÙN GXYDUODU YH SHQFHUHOHUOH ÄHYUL

<LQH GH EX WHNUDUOD\DQ ELU GXUXP RO\
QÙIX] HWWLùL EL] LQVDQODU Q ÄRùX]DPDQ
ID]OD NL L ÓOGÙ

$QFDN ÓQHPOL RODQ H\ ÄRùXPX]XQ KD\D
EL]H KD\DWWD NDODELOHFHùLPL]L VÓ\OHGL
YDUO ù YH ÄRùXPX]X ÓOGÙUPHGHNL ED DU
EL]H EXQGDQ NXUWXOPDN LÄLQ ELU DQV
\DUDW OPDV YH JHOL WLULOPHVL JHUHNWL
JÓNWHQ GÙ PH] .HQGLPL]L NRUXPDO \ ] YH
DOW QGD RODQ YH EXQX ELOPH\HQOHUL X\D
$SWDO YH\D DN OV] RODPD\ ] 6DVHQ

6RQXQGD SDQGHPL VRQUDV HKLU ÄRùXQOXNC
6LPRQ /HZVHQ ELU .DQDGD GHUJLVLQGH
SROLWLNDV Q GD HWNLOHU GL\H LùQHOHGL %
NHQWVHO ELU PHUFHNOH JÓUPHr ÄDùU V \DSI
DQODPO G U $FXWR YH GLùHUOHUL

%X PHUFHN VD\HVLQGH SDQGHPLQLQ VHQGURP
)HLQ LQ 1HZ <RUN &LW\ KDNN QGD KHP W
Ó]JÙ YH PHNDQ Q ÓWHVLQH L DUHW HGHUHN Y
RUWD\D Ä NDUDUDN \D]G ù JLEL

9LUÙV QH HOL ELU]DUDIHW YH ÄDEDOD\DC
RUWD\D Ä NDUDQ HKUH ELU D\QD WXWX $
VDKLS RODQODU LOH YLUDO GDOJD WHSHG
RODQODU NRUXPDNWDQ ED ND VHÄHQHùL R
DF PDV] ELU NHQWVHO PDQ]DUD %URQ[%
RUDQODU Q 0DQKDWWDQ GDNLOHUOH NDU
JÓVWHUGL *HRUJH)OR\G 0LQQHDSROLV W

D LNDU RODQ N U OJDQO ù UNÄ O ù YH G
<RUN $PHULND %LUOH LN 'HYOHWOHUL QGH
SURWHVWRGD SDWODN YHUGL

2UWD\D ¤ NDQ Q ³WHVLQGH

3DQGHPL V UDV QGD YLUÙVÙQ RUWD\D Ä NPD N
D] QGDQ %DW GD JÙYHQOL YH KDVWDO NWDQ
EL]H JÓVWHUGL $QFDN YLUÙVÙQ RUWD\D Ä NW
NHQGL ED QD KDUHNHW HWPH] %X DQODPGD YL
SROLWLN ROPDN]RUXQGD\ ] 9LUÙVOHU HKLU
GHùL LPL WDOHS HWPHOL\L] .UL]LQ VHQGURPL
DUW N HKULQ PHNDQVDO GLOELOJLVL ROGXùXQ
NUL]LQ VHQGURPLN GRùDV JÙQÙPÙ]ÙQ NHQW\
GÙQ\DV QD \ÓQHOLN ELU EDN DÄ V DÄW

$UW N X\XP VDùODPDQ Q WRQODU YDU 3ODQOD
VRUDUNHQ %DW GD 1HZ <RUN 0LODQR YH\D 7
\HUOHUGHQ ÓùUHQPH\H GHYDP HWPHVL JHUHNL
EÙWÙQOH WLULFL YH WHNLO DQODW ODU \HULQ
YH JÙQH\GHNL NHQWVHO VÙUHÄOHUH YH GHQH\
RGDNODQPD\D ÄDù U \RUX] r %KDQ HW DO

.D\QDNÄD

$FXWR 0 /DUFRP 6 .HLO 5 HW DO 6HHLQJ &29,'

1DWXUH 6XVWDLQDELOLW\ KWWSV GRL RUJ V

%DVFDUDPXUW\ 'NVKDQD 9UXQGD %KDWW DQG)UHG /X
FRPPXQLW\ H[SODLQV &DQDGDpV &RYLG FULVLV OLNH Q
WKHJOREHDQGPDLO FRP FDQDGD DUWLFOH O S EUDPSWRQ

%KDQ * &DOGHUD 7 *LOOHVSLH . 6LPRQ $

XUEDQLVPV DQG FROOHFWLYH OLIH (QYLURQPHQW DQG 3O

VRFLHW\DQGVDFH RUJ DUWLFOHV WKH SDQGHPLF VRXWK

%LJOHUL 6DPDQWKD /RUHQ]R 'H 9LGRYLFK 5RJHU .H
5HSRVLWLRQLQJ &29,' DW WKH VRFLDO DQG VSDWLDO

%ROO\N\ 7KRPDV 7KH)XWXUH RI *OREDO +HDOWK ,V
KWWSV ZZZ FIU RUJ DUWLFOH IXWXUH JOREDO KHDOW

&RQQROO\ & .HLO 5 $OL 6 + ([WHQGHG XUED
'HPRJUDSKLF FKDQJH LQIUDVWUXFWXUH DQG JRYHUQDQ
RUJ

(OVFKHVKWDZ\ <DVVHU o%XLOG %DFN %HWWHUp RU
3DUDGLJP LQ WKH $UDE :RUOG DQG %H\RQG %XLOW (QYU

)DLUV 0DUFXV 1R HYLGHQFH WKDW XUEDQ GHQVL
GH]HHQ 1RYHPEHU KWWSV ZZZ GH]HHQ FRP FI
ßRULGD

)ORULGD 5LFKDUG $QGUÆV 5RGULJXH] 3RVH DQG 0LFKD
6WXGLHV '2,

+RUWRQ 5LFKDUG q2IßLQH &29,' ,V 1RW D 3DQGH

.HHVPDDW -HQQLHU .ZDPH 0FNHQ]LH 5LFKDUG)ORULGD
*OREH DQG 0DLO 0D\

/HZVHQ 6LPRQ 7KH 6SDQLVK)OX 5HZURWH +LVWRU\
-XO\ KWWSV WKHZDOUXV FD WKH VSDQLVK ßX UHZUR

/RX (WKDQ :K\ :HpUH 6R %DG DW 'LVDVWHU 3ODQQLQ
ZK\ ZHUH VR EDG DW GLVDVWHU SODQQLQJ

1DVVHU 6KDQLID %UDPSWRQ KDV HPHUJHG DV RQH
FDXWLRQ RQ ZKHUH WR OD\ EODPH &%& 1HZV 6HSWHPEH

KWWSV ZZZ FEF FD QHZV FDQDGD WRURQWR EUDPSWRQ

1XFFLWHOOL 'QD 7KH VWDJHV RI FOLPDWH GHQLD
6HSWHPEHU KWWSV ZZZ WKHJXDUGLDQ FRP HQYLURQ
FOLPDWH FKDQJH FRQWUDULDQV VWDJHV GHQLDO

3KLOLSV)HQ .LP 7KH 0HWDPRUSKRVLV 7KH 1DWL
VRFLHW\ VDYLQJ DPHULFDQ FLWLHV OL]DEHWK FRKHQ

5DWOLII (:H &DQ 3URWHFW WKH (FRQRP\ )URP 3DQ

:LUHG -XQH KWWSV ZZZ ZLUHG FRP VWRU\ QDWKDQ Z

5REHUWV 6LREKDQ 7KH 6ZLVV &KHHVH 0RGHO RI 3D
KWWSV ZZZ Q\WLPHV FRP KHDOWK FRURQDYLUX\

6DED 5RVD 'RZQWRZQ SXW WR WKH WHVW 7RURQWR

6DVVHQ 6DVNLD 7KH FLW\ DQG WKH YLUXV 6KDSH
VDVNLD VDVVHQ FULVLV FRURQDYLUX\

6FKZHL]HU 3LD -RKDQQD DQG 2UWIULHG 5HQQ *RYHU
PLWLJDWLRQ 'LVDVWHU 3UHYHQWLRQ DQG 0DQDJHPHQW
RUJ '30

6PLWK /LOO\ o=RRP WRZQVp DUH H[SORGLQJ LQ WK
IDVWFRPSDQ\ FRP]RRP WRZQV DUH H[SORGLQJ LQ \

6SHOOEHUJ % 7D\ORU %ODNH % 2Q WKH H[RQHUDWLRQ
,QIHFW 'LV 3RYHUW\ KWWSV GRL RUJ

6WRQH /DXUD &29,' KDV EURXJKW 3DWULFN %URZQ
DQG 0DLO 0D\ KWWSV ZZZ WKHJOREHDQGPDLO FRP FH
EDFN WR SURPLQHQFH LV DOO IRUJLYHQ

7D\ORU = - 7KH UHDO HVWDWH ULVN IL[5HVLGH
PHWURSROLV (QYLURQPHQW DQG 3ODQQLQJ $ (FRQRP
RUJ ;

7KH /DQFHW 0LFUREH (GLWRULDO &29,' ZH ZLOO
0LFUREH 2FWREHU '2, KWWSV GRL RUJ 6

0XUDW ¹ÄRùOX 5RJHU .HLO DQG 6H\IL 7RPDU &RQWD
WKH *UHDWHU 7RURQWR $UHD %XLOW (QYLURQPHQW
EHQY

:+2 &LWLHV DQG SXEOLF KHDOWK FULVHV UHSRUW R
/\RQ)UDQFH KWWSV ZZZ ZKR LQW SXEOLFDWLRQV L LWH

:ROI 0HLNH ,V WKHUH UHDOO\ VXFK D WKLQJ DV qRQ
IURP WKH SHUVSHFWLYH RI FXOWXUDO DQWKURSRORJ\ 6R

KWWSV GRL RUJ M VRFVFLPHG

:ROI 0HLNH 5HWKLQNLQJ XUEDQ HSLGHPLRORJ\ 1D
-RXUQDO RI 8UEDQ DQG 5HJLRQDO 5HVHDUFK

<DQJ -HQQLIHU .DWH $OOHQ 5DFKHO 0HQGHOVRQ DQG $
FLW\pV QRUWKZHVW FRUQHU KDV EHHQ oIDLOHG E\ WKH V\
JWD WRURQWRV FRYLG GLYLGH WKH FLW\V QRU

<RQJ (G +RZ 3XEOLF +HDOWK 7RRN 3DUW LQ ,WV 2ZQ
WKHDWODQWLF FRP KHDOWK DUFKLYH KRZ SXEOLF K

=DLURQ ; &29,' RQ WKH HSLVWHPLF FRQGLWLRQ

KWWSV ZZZ RSHQGHPRFUDF\ QHW HQ FDQ HXURSH PDNH

RWXUXP

(.2/2- . .5 = 7$57, 0

278580 %$.$1,

3URI 'U $\NXW ¤R

6•UG•U•OHELOLU *ÖGD 6LVWHPOHULQLQ <D
gUJ•WOHQPHOHUL ùVWDQEXO 7•NHWLFL .RRS

$U *ÓU 6HULP 'LQÄ 3URI 'U $]LP

ùNOLPH 8\XPOX .HQWVHO 3ODQODPDGD
ùOLûNLOHULQLQ ùQ

(OLI *ÙOGÙ 'U ³ùU ¹\HVL ¤D

<HUHO 6X .UL]LQLQ d|]•P• ùoLQ %•W•QOHûL
7HPHOOL 6WUDWHMLOHU

)DWPD ³\NÙ ¤ÓPH] 'U ³ùU ¹\

2WXUXP EXQGDQ VRQUD DELO

%X ELOGLUL \D]DU Q LVWHùL Ù]

6ÙUGÙUÙOHELOLU <HUHO * GD
%LU $NWÓU 2ODUDN * GD ³UJÙV
.RRSHUDWLßHUL YH * GD 7RSOXO

$U *ÓU 6HULP 'LQÄ

VWDQEXO 7HNQLN ¹QLYHUVLWHVL HKLU YH %ÓOJH

'RÄ 'U (OLI $ND\

VWDQEXO 7HNQLN ¹QLYHUVLWHVL HKLU YH %ÓOJH

³]HW

(QGÙVWULOH PL J GD VLVWHPLQLQ N U OJDQ
GD\DQ NO VLVWHPOHULQ JHOL WLULOPHVLQGH
YH \HUHO WDEDQO ÙUHWLP GDù W P YH WÙN
ÓUJÙWOHQPH ELÄLPOHULQL KDUHNHWH JHÄLUP
\HUHO J GD HNRQRPLOHULQL \DUDWDUDN \HUHO
ELU DNWÓU RODUDN RUWD\D Ä NPDNWDG U $U
YH GD\DQ NO J GD VLVWHPOHULQLQ ROX WXUX
LQFHOHQPHVL DPDÄODQPDNWDG U $UD W UPD
YH qJ GD ÓUJÙWOHQPHOHULr ÙVWÙQGHQ WDUW
NRRSHUDWLIL YH J GD WRSOXOXùX LOH JHUÄH
DNWDU P Ù]HULQGHQ NXUJXODQP W U (OGH H
J GD VLVWHPOHULQLQ ÓWHVLQGH GD\DQ NO O N
RUWD\D NR\PX YH EÙWÙQFÙO HWNLOHULQLQ J
SD\GD O YH DÄ N ELU RUJDQL]DV\RQ \DS V Q Q
JÓVWHUPL WLU %X DUD W UPDQ Q OLWHUDWÙU
WHRULN YH DPSLULN NDWN VDùOD\DFDù GÙ ÙQ
DOWHUQDWLI ELU EDN DÄ V GD VXQPDNWDG U

$QDKWDU6ÙHUGLUHÙOHLELOLU \HUHO J GD VLVWHPOHUL
7ÙNHWLFL NRRSHUDWLßHUL * GD WRSOXOXNODU

)RRG 2UJDQL]DWLRQV DV DQ $FW /RFDO)RRG 6\VWHPV 7KH &DV &RRSHUDWLYHV DQG)RRG &RPPX

$EVWUDFW

%\ LQFUHDVLQJ WKH YXOQHUDELOLW\ RI WKH GHPRQVWUDWHG WKH XUJHQF\ LQ GHYHORSLQ IRRG V\VWHPV EDVHG RQ LQWHJUDWHG VXVWD FRQVXPSWLRQ KDYH WKH SRWHQWLDO WR PREL DUH HPHUJLQJ DV DQ LPSRUWDQW DFWRU LQ V\ IRRG HFRQRPLHV 7KH DLP RI WKH UHVHDUFK L WKH FUHDWLRQ RI VXVWDLQDEOH DQG UHVLOLH 7KH UHVHDUFK LV EDVHG RQ WKH OLWHUDW RYHU qORFDO IRRG HFRQRPLHVr DQG qIRRG RU VWUXFWXUHG LQWHUYLHZV ZLWK FRQVXPHU F 7KH ILQGLQJV REWDLQHG GHPRQVWUDWHG WKH UHVLOLHQFH DQG VXVWDLQDELOLW\ EH\RQG V WKHLU KROLVWLF HIIHFWV FDQ RQO\ EH SRVVL RSHQ RUJDQL]DWLRQDO VWUXFWXUH EHWZHHQ ZLOO VWDUW D QHZ GLVFXVVLRQ LQ WKH OLW FRQWULEXWLRQ ,W DOVR RIIHUV DQ DOWHUQD

.H\ZRUGV 6XVWDLQDEOH IRRG V\VWHPV /RFD &RQVXPHU FRRSHUDWLYHV)RRG FRPPXQLWLHV

*LUL

&29,' GÙQ\D JHQHOLQGH YDU RODQ DÄO N J
VRUXQODU Q JÓUÙQÙUOÙùÙQÙ DUW U UNHQ \H
ÓOÄHNWH \D DQDQ EX RN J GD VLVWHPLQLQ]I
VÙUGÙUÙOHELOLU HVQHN YH GD\DQ NO ELU VL
JÓVWHUPL WLU %OD\ 3DOPHU YG &ODSS
$JDLQVW)RRG &ULVHV 6DOJ QOD PÙFDGH
YH KDUHNHW N V WODPDODU KHP ÙUHWLPLQ V
VDùO N NUL]LQLQ DÄO N NUL]L\OH GDKD GD NDU
DUW UP W U 3DQGHPL \ O LWLEDU \OD
VLVWHPOHULQLQ NUL]OHUH X\XP VDùODPD \HWH
]RUXQOX N OP ROVD GD VÓ] NRQXVX WDUW P
LNOLP GHùL LNOLùL HQGÙVWULOH PL NÙUHVH
YH J GDQ Q Ù]HULQGH \DUDWW ù EDVN ODU LO
RODUDN VÙUHJHOPHNWHGLU

<HUHO J GD NDYUDP EDKVHGLOHQ WHKGLWOHU
ND\J ODU HOH DOPDQ Q YH \DUDWW ù VRUXQO
.HQWOL WRSOXPGD JHOLU GÙ]H\L DUW \OD RU
GHùL HQ WÙNHWLP ELÄLPOHUL YH ELOJL\H HU
GDKD VDùO NO GDKD D] L OHQPL YH GDKD JU
IDUN QGDO ù Q ROX PDV GD \HUHOGH ÙUHWLOH
3LQFKRW 7HOOLJPDQ YG

$EDWHpQLQ EHOLUWWLùL Ù]HUH \HUHO J
LOL NLOHULQH GD\DQDQ GDKD NÙÄÙN FRùUDIL
VLVWHPOHUL ROX WXUXU 6ÙUGÙUÙOHELOLU \H
JÙYHQHQ HQWHJUH YH VÙUGÙUÙOHELOLU ELU
JHUÄHNOH WLULOHELOHFHùLGLU %Ó\OHVLQH E
JHUÄHNOH WLULOPHVL LVH DQFDN \HUHO WDE
ROX WXUXOPDV \OD PÙPNÙQ ROPDNWDG U &RQ

6ÙUGÙUÙOHELOLU \HUHO J GD VLVWHPOHULQLQ
\ÓQWHPOHUL JHOL WLUHUHN \HQL ÓUJÙWOHQPH
YG ³UQHùLQ J GD ÓUJÙWOHQPHOHUL \
\HUHO J GD VLVWHPOHULQLQ JÙÄOHQGLULOPHV
L PRGHOOHULQLQ JHOL WLULOPHVLQGH ÓQFÙ
JHUÄHNOH HQ HNRQRPLN HWNLOH LPOHUOH ÙU
ELUOLNWH ÓùUHQPH YH ÙUHWPH VÙUHFLQL WH
J GD VLVWHPOHULQLQ X\XP VDùODPD NDSDVLW

]LQFLUOHULQGH YH DùODU QGD GL\DORJ HIID
JÓVWHULU %Ó\OHOLNOH VÓ] NRQXVX RUJDQL]
DUW UPDGD HWNLQ ELU URO R\QDG ù VÓ\OH
q7DUODGDQ 6RIUD\D 6WUDWHMLVLrQGH)DUP W
DUDF O ù \OD WHGDULN]LQFLULQLQ WÙP VHYL
XOD W UPD &29,' pD YHULOHQ \DQ WODU GRù
NDSDVLWHVLQL JHOL WLUGLùL RUWD\D NRQPX

7ÙUNL\HpQLQ WDU P YH J GD WDULKLQGH &XPK
UDVWODQ \RU ROVD GD ÙUHWLFL YH WÙNHWLF
ELU JLUL LP RODUDN RUWD\D Ä NDQ q\HQL QHV
JHOL PH\H ED ODP W U $QFDN EX ÓUJÙWOHQ
JÓUÙOPHNWHGLU 8OXVDO OLWHUDWÙUGH ROGX
EX ÄDO PD \HUHO WÙNHWLFL DùODU Q Q JÙÄC
GDù W P QGD HWNLQ DNWÓU RODUDN \HU DODQ
\HUHO J GD VLVWHPOHULQLQ ROX WXUXOPDV Q
Ù]HULQGHQ LQFHOHQPHVL DPDÄODQPDNWDG U
NDSVDP LNL DG PO NXUJX\OD ÄL]LOPL WLU
\DUDW OPDV QGD YH GHYDPO O ù QGD NDYUDP
ÓUJÙWOHQPHOHULr ÙVWÙQGHQ NXUPDN YH WDU
DÄ ODQ NDYUDPVDO EDùODP DPSLULN NDQ WC
NRRSHUDWLIL YH J GD WRSOXOXùX LOH 0D\ V
q\DS ODQG U OP JÓUÙ PHr VRQXÄODU Q Q DNV

7ÙUNL\HpGH J GD ÓUJÙWOHQPHOHULQLQ ÄRN
XOXVDO OLWHUDWÙUGH VÓ] NRQXVX \HQL JLU
UDVWODQPDNWDG U YH EX ÄDO PDODU Q ELU N
YH JHOL PH VÙUHÄOHULQL HOH DO UNHQ ¤HOL
WÙNHWLFL GDYUDQ ODU Q YH YH\D EX J
DUD W UPDODU GD EXOXQPDNWDG U %R]OX YH
ÓUJÙWOHQPHOHULQLQ \HUHO J GD HNRQRPLOH
HWNLVLQL VRQXÄ RGDNO GHùHUOHQGLUHQ KH
QHGHQOH EX DUD W UPD OLWHUDWÙUGH \HQL
VDùOD\DFDù LÄLQ ÓQHP WD PDNWDG U $\Q]
\HUHO J GD VLVWHPOHULQLQ ROX WXUXOPDV Q
JHOL WLUPH\H]HPLQ KD] UODPDN LÄLQ DOWHU

6ÙUGÙUÙOHELOLU <HUHO * GD 6LVWHPOHUL 2ODUDN * GD ³UJÙWOHQPHOHUL

.ÙUHVHO HQGÙVWUL\HO J GD ÙUHWLPL YH GDù JLGHUHN DÄ OPDV \OD RUDQW O RODUDN J GD KHUKDQJL ELU D DPDV QGD ROX DFDN DNVDNO FLGGL ELU JÙYHQOLN DÄ ù \DUDWPD ULVNLQL VRV\DO ÄHYUHVHO YH HNRQRPLN VRUXQODUD \ WHPHOOL ELU \DS \ YXUJXOD\DQ q\HUHOH GÓQ NÙUHVHO J GD VLVWHPLQLQ ÄÓNHFHùL YDUVD\ L\L \ROXQXQ J GD ND\QDNODU Q Q ÄH LWOHQGL VÙUPÙ WÙU $\Q]DPDQGD \HUHOOLN NDYUDP DGLO ROPDV LÄLQ NULWLN ELOH HQOHU RODQ GD\DO DOWHUQDWLI J GD VLVWHPOHULQLQ ED

* GD VLVWHPOHULQL \HUHOOH WLUPH JLUL LPO WHGDULN]LQFLUOHULQL GLùHU ELU GH\L OH VWUDWHMLGLU *RRGPDQ 0DUVGHQ & VD\ GD GÙ]OHPVHO EDùODQW \D VDKLS RODFDN DUWDFDN YH EXQD EDùO RODUDN J GD VLVWH \HWHQHùL JHOL HFHNWLU %HQWRQ YG pQ WÙNHWLPLQL KHP VRV\DO KHP GH PHN¿QVDO R ER\XQX N VDOW UNHQ GLùHU WDUDIWDQ GD J GHVWHNOH\HQ \HUHO J GD HNRQRPLHUL \DUD J GD HNRQRPLVL DUDV QGD GÓQJÙVHO ELU LOL \HUHO J GD HNRQRPLOHULQLQ RODPD\DFDù Q \ HWNLOL ELU \HUHO J GD VLVWHPLQLQ ROX XS V

8OXVDO OLWHUDWÙUGH\HLOHNOJHGDEKÄRQRPLV 6FKXOVFKHQN ILQDQVDO EH HUL VRV\DO \HUHO WÙNHWLP DPDF \OD \HUHO ÓOÄHNWH J G L OHWPHOHUGHQ ROX DQ ELU Dù LÄLQGHNL ND ED ND OLWHUDWÙUGH \HU DODQ GLùHU WDQ GRùUXOWXVXQGD NDYUDPVDOOD W UP W U %X

- 0RGHUQ J GD VLVWHPLQLQ ED] ROXPVX] HWN DGLO HVQHN YH JÙÄOHQGLULOPL \HUHO WRS +RGJH YG 0F.LEEHQ
- 7RSOXPXQ JHOHFHNWHNL RNODUD NDU GD\ VDùODPD SRWDQVL\HO \ÙNVHN J GD VLVWHP

- +HP ÙUHWLFL NLPOLùL YH ÙUHWLP LOL NLOH ROX DELOHFHN RODV ÙUÙQ GHùHU ND\E Q Ó 0F)DGGHQ YG
- 6DùO NV] \D DP WDU]ODU YH J GD UHMLPO J GD JÙYHQVL]OLùL YH DVLPHWULN HNRQRPI KDVWDO NODUrD NDU SDQ]HKLUGLUOHU &D
- <HQL Dù LOL NLOHUL YH GHùHU NDWPD \ÓQW HNRQRPLN NDON QPD\ GHVWHNOH\HUHN GDK ÄDEDODU Q Q ELUOH LPLGLU 5HQWLQJ YG 0F)DGGHQ YG
- <HUHOGH WRSOXPXQ WÙP Ù\HOHUL LÄLQ L I YH EHQOLN VD\J V Q YH JÙYHQ GX\JXVXQX \D YH 6PLWK

<DS ODQ DUD W UPDODU GRùUXOWXVXQGD \HUI VLVWHPOHULQLQ JHOL LPLQL YH VÙUGÙUÙOHE VRV\R HNRQRPLN DÄ GDQ GHVWHNOHGLùL GH J LIDGH HWWLùL JLEL \HUHO J GD HNRQRPLOHUL X]XQ VÙUHOL YH\D EHNOHQPHGLN RNODUD GD Ä NDELOHFHN WRSOXPODU Q JHOL LPLQH \DUQ]LQFLULQL YH HWNLOH LPL LÄHUHQ \HUHO J GD G¿KLO HWPHNWHGLU $OWHUQDWLI J GD DùODU HUL LP WDOHEL\OH ELUOH LQFH GH \HUHO J G VDùOD\DQ ELU DNWÓU RODUDN ÄH LWOL J GD \HUHO J GD ÓUJÙWOHQPHOHUL ELU \DQGDQ \HU \DQGDQ VÙUGÙUÙOHELOLU \HUHO J GD VLVWHP J GD HNRQRPLOHUL JÙÄOHQGLUHQ HWNLQ EL

* GD ÓUJÙqWHUHQPHHÓUJÙWOHQHUHN DUDF OD ÙUHWLFLVL\OH GRùUXGQ LOHWL LP NXUDUDN J GD\D XOD PD\D QL\HWOL EX J GDODU Q ÙUH ROPDN NDUERQ D\DN L]LQL D]DOWPDN J GD LVWH\HQ YH]HKLUVL] ELU GÙQ\D KD\DO HGHQ WRSOXOXNODUG Ur . O Ä * GD PLUDV Q VDùODPDN Ù]HUH \ROD Ä NDQ J GD ÓUJÙWOHQF JHOHQHN YH NÙOWÙU ÓJHOHULQL PHUNH]H DO]HPLQLQ ROX WXUXUODU

pOL \ OODUGD NLP\DVDO NXOODQ PODUD ND
RODUDN -DSRQ\DpGDQ GRùDQ J GD ÓUJÙWOHQP
ELUOLNWH WHNUDUGDQ JÙQGHPH JHOPL WLU 5
WRSOXOXNODU WÙNHWLFL NRRSHUDWLßHUL W
ERVWDQODU \HUHO WRKXP DùODU JLEL IDUNC
ÄH LWOL \DS ODQPDODU Q Q ROPDV QD UDùPHQ
JÓVWHUPHNWH YH ÙUHWLFL WÙNHWLFL DUDV Q
ÙUHWLFLOHU WDUDI QGDQ \HWL WLULOHQ VDùO
WÙNHWLFL\H XOD W U OPDV J GD Dù Q Q SDU
ROX XPX YH ELOJL DNWDU P QGDNL UROÙ LOH
6Ó] NRQXVX L OH\L LQ ID\GDODU Q NDQ WODU
JHUÄHNOH WLULOHQ DUD W UPDGD ÓUJÙWOÙ W
D PDN LÄLQ RUWDN ÙUHWLP GHQH\LPL Ù]HULQG
DùODU DUDF O ù \OD DOWHUQDWLI VÙUHÄOHU J

7ÙUNL\HpGH J GD LOH LOL NLOL ÓUJÙWOHQPHO
pOX \ OODUGDQ LWLEDUHQ NÙÄÙN NÓ\OÙOÙ
\DVDO GÙ]HQOHPHOHU LOH ÓQ SODQD Ä NP W U
ÙUHWNHQ JÙFÙQÙQ DUW U OPDV XOXVDO SD]D
NDU V QGD YDUO ù Q VÙUGÙUHELOPHVL JLEL
SURJUDPODU QD GÓQÙ PÙ WÙU ³]GHQ ³]H
NXUXODQ NRRSHUDWLßHU YH NXUXOX ODU 7DU
JLEL EHOLUOHQHQ KHGHßHUH XOD PDN LÄLQ
LWLEDUHQ GHYOHWLQ WDU PD \ÓQHOLN SROW
\D DQP DLOH HPHùL\OH ÙUHWLP \DSDQ ÙUHWL
ELU GÓQHPH JLULOPL WLU < OG U P %X
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KDOH JHWLUPL WLU 7DU PVDO ÙUHWLPH GHYDP
ÓQÙQÙQ NHVLOPHVL\OH J GDQ Q NDU OD W ù
WDU PVDO LODÄ JLEL NLP\DVDO JLUGLOHULQ \R

7DU P YH J GDQ Q KHP ÙUHWLPH KHP GH VDù
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WRSOXP JHQHOLQGH \HQL DUD\ ODU JÙQGHPH
GHVWHNOL WDU P JUXSODU ÄLIWÄL VHQGLND
JÓVWHUHQ ÓUJÙWOHQPHOHU WDU PGD ÙUHWLP
PRGHOOHU ROX WXUPD\D ÄDO PDNWDG U ³]GHQ
LOH WÙNHWLFLOHU DUDV QGDNL PHVDIHQLQ D]
NXUXOPDV VDùO NO J GD\D HUL LPLQ VDùODQ

N UVDO JHÄLP ND\QDNODU Q Q NRUXQPDV ÄHY
\HQLOLNÄL ELÄLPOHUL LOH ÄÓ]ÙP ÙUHWLOPH
KHGHßHU .DUDND\D GRùUXOWXVXQGD NX
GD\DQ NO \HUHO J GD VLVWHPLQLQ GROD\ V \
I UVDW VXQPDNWDG U .HQWOHU YH WRSOXPOD
ÓQHPOL ROGXùX ELU JÙQGHPGH XOXVDO OLWI
HGLOHQ J GD ÓUJÙWOHQPHOHULQLQ HWNLOHQ
ÓQHP WD PDNWDG U %X NDSVDPGD ÄDO PD
SRWDQVL\HOHUL DQODPD\D WRSOXPVDO GD
NDWN ODU Q RUWD\D NR\PD\D ÄDO DFDNW U

$UD W UPDQ Q <ÓQWHPL

7¹ . YHULOHULQH JÓUH PLO\RQD \DNOD DO
YH EÙ\ÙN NHQWVHO SURMHOHU LOH RUPDQO N
QHGHQL\OH VWDQEXOpGD J GD\D HUL LP KHU
*UHHQSHDFH %X VRUXQXQ ÄÓ]ÙOPHVL LÇ
YH 7ÙUNL\HpGHNL PHN¿QVDO GDù O PODU QD
VWDQEXOpGD \RùXQOD W ù JÓUÙOPHNWHGLU

VWDQEXOpXQ ELU PHWURSROLWHQ DODQ ROD
NDSDVLWHVL PHYFXW EH HUL VHUPD\H YH IL]L
NDSDVLWHVL GROD\ V \OD J GD WHPHOOL \HUH
$QFDN EX I UVDWODU \DUDWDQ HWNHQOHUL
SRWDQVL\HOLQL RUWDGDQ NDOG UPDV QHGHQ
JHOL PH PRGHOL \DOQ]FD X]DN PHVDIHGHQ W
DN \OD PÙPNÙQ ROPDNWDG U %X GXUXP \HUL
IDUNO OD VD GD KHP LÄHULN RODUDN VDùO NO
\DUDWDELOHFHN KHP GH EX ÓUJÙWOHQPH PRGH
VDùOD\DELOHFHN ROPDV VWDQEXOpX ÓQFHOL
ND\QDN OLWHUDWÙU WDUDPD\D GD\DO RODUD
\DQV PDODU Q JÓUPHN LÄLQ VWDQEXOpGDNL
ÙUHWLFL SD]DUODU Q Q VRNDN VRIUDODU Q Q
EX ÓUJÙWOHQPH PRGHOOHUL HNLO LÄLQGH
QHGHQL\OH qJ GD WRSOXOXNODU r YH qWÙNHW

HNLO VWDQEXOpGDNL DOWHUQDWLI J GD DùODU .D\Q

VWDQEXOpGD WÙNHWLFL NRRSHUDWLIL YH
ÓUJÙWOHQPHOHUH H PDLO)DFHERRN YH ,QVW
WÙNHWLFL NRRSHUDWLILQGHQ %H LNWD .RRS
7ÙNHWLP .RRSHUDWLIL %¹.223 *Ó]WHSH .RRS
<HU'HQL] .RRSHUDWLIL YH GÓUW J GD WRSOXO
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YH 0RPR *ÓQÙOOÙOHUL JHUL GÓQÙ DO QDEL
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.ÙÄÙN\DO YH 0RPR *ÓQÙOOÙOHULQLQ NXUXF
QHGHQL\OH D\Q FHYDSODU Q \HU DOPDV Q ÓQ
G¿KLO HGLOPHPL WLU (PDLO \ROX\OD LOHWLO
DUDV QGD NDW O PF ODU Q WHUFLKLQH JÓUH Ä
JÓUÙ PHOHUOH YH\D \D] O RODUDN WRSO

HNLO *ÓUÙ PH \DS ODQ J GD ÓUJÙWOHQPHOHULQLQ N
YH ÓUJÙWOHQPH \DS ODU 3DUDQWH] LÄLQGH EHOLUWL
ROGXNODU ÙUHWLFL VD\ ODU G U

.D\QDN $UD W UPD NDSVDP QGD ÙUHWLOPL WLU

$ODQ $UD W UPDV VWDQEXO 7ÙNHWLFL .RR

7ÙNHWLFL NRRSHUDWLßHUL YH J GD WRSOX
GRùUXOWXVXQGD HOGH HGLOHQ EXOJXODU D D
ED O NODU WHPHO RDUDN \HUHO J GD HNRQRP
\DS VDO RDUDN DQODPD\ NXUGXNODU Dù L
DN ODU Q PHYFXW GXUXPX\OD \DQV WPD\ \
VÙUGÙUÙOHELOLUOLNOHULQH Dù NDSDVLWHOH
LOL NLQ VXQGXNODU SRWDQVL\HOHUL \DQV W

‡ .XUXOXû QHGHQOHUL YH KHGHÁHUL

<DS ODQ JÓUÙ PHOHUGH KHU ELU ÓUJÙW \DS V
IDUNO NHOLPHOHUOH LIDGH HWPL ROVDODU C
q\HUHO J GD\ NÙÄÙN ÓOÄHNOL ÙUHWLFLOHUGH
XOD W UPDNr

%¹.22qWDU PGDNL WRSOXPVDO HNRQRPLN YH H
RODUDN %RùD]LÄL ¹QLYHUVLWHVL qNWLVDGL ÙVWQG
\DSDQ \DKXW L OH\HQ ÙUHWLFLOHUOH GRùUXGD
QRNWDODUGDQ WHVLP DO QDELOHFHùL ELU VL
%LU 8qXVWDUVHWOHUGH RUJDQLN SD]DUODUGD
ÄRN SDKDO \D VDW ODQ DO F V Q Q EHOOL RC
NLP\DVDO NDW ODUDN ÙUHWLOPL L OHQPL ÙU
VXÄ ROGXùXQXr YXUJXOD\DUDN J GD NRQXVXQX

.DW O PF ODU Q KHSVL WÙNHWLFL\H DGLO WHP
ÙUHWLFLOHUH ID\GD VDùODPD\ ELULQFLO KHGH
LIDGH HqWPHWWLFLNÓ\OÙOÙùÙQ GHVWHNOHQPHV
WÙNHWLFL\H XOD W UPDQ Q \ROODU Q]RUOX\P
GDKD ÄRN VRV\DO JLUL LP RODUDN DGODQG UP
ID\GD VDùODPDN PDNVDWO NXqDXOOXDXQ\DQ
LVWHGLNOHUL NL LOHULQ ÙUÙQOHUL VDW Q DO

s ³UJÙWOHQPH PRGHOOHUL

*ÓUÙ PHOHULQ JHUÄHNOH WLULOGLùL NRRSHU
ÓUJÙWOHQPH PRGHOL NDW O PF YH HIIDIW U
JÓQÙOOÙOÙN HVDV QD GD\DQPDNWDG U ³UJÙW
IDUNO O N JÓVWHUPHNWHGLU %LU DQDRNXOX
KL]PHW YHUL\RU ROPDV QHGHQL\OH 0RPR NDSD

* GD WRSOXOXNODU ÄDO PDODU Q HQIRUPH
VDKLS NRRSHUDWLßHUGHQ GDKD GÙ]HQVL] YH
\DS JÓVWHUPHNWHGLUOHU 7RSOXOXNWD \HU
L OHUL ROGXùXQGDQ]DPDQ N V WODU Q Q ROC
GD\DQDQ \DS Q Q L OH\L LQGH DNVDNO NODUD
WRSOXOXNODU QGD JÓQÙOOÙ YH\D WDP]DPDQC
KHP ÙUHWLFLQLQ KHP GH WÙNHWLFLQLQ ROXPC

'DKD VLVWHPOL ELU \DS \D VDKLS RODQ NRRSH
QHW ELU HNLOGH EHOLUOHQPL WLU \ O C

VWDQEXOpGDNL LON ÓUQHN ROPDV YH ÓQHPC
NXUXODQ NRRSHUDWLßHU LÄLQ ELU PRGHO YH
HNLOGH DqOÙWÙPD NWDGL]DV\RQHO YH ILNLU
<DNOD N NDGDU JÓQÙOOÙ RODUDN VDW
NDUJR NDU ODPD YE ÄRN VD\ GD L L EHUDEHU
GHùLO R\ ELUOLùL\OH DO Q \RU 7DPDPHQ KL
NRQXVX <ÓQHWLP .XUXOXPX] YH *HQHO .XUXO
X\JXQ RODUDN NXUXOX\RU FLYDU RUWDù P
GHùLO DPD KHP RUWDN KHP JÓQÙOOÙ RODQOD
NDW O \RU YH NDUDUODU DO \RU 2UWDNODU P
ÓùUHQFLOHUGHQ ROX X\RU r

7HPL] +DVDW JÓUÙ PH \DS ODQ ÓUJÙWOHQPHO
HQ QHW HNLOGH WDQ PODQG ù NRRSHUDWLI
D Dù GDNL ELULPOHUGHQ ROX PDNWDG U

- ¹UHWLFL JUXEX ¹UÙQOHULQ EHOLUOHQPHVL
  GDLU NDUDUODU Q YHULOPHVL ÙUÙQOHULQ
  NRQWUROÙ
- 6DW JUXEX *HOHQ ÙUÙQÙQ SL\DVD LOH LOL
  GHQJHOL EHVOHQPH JÓ] ÓQÙQGH EXOXQGXU
  ROX WXUXOPDV
- 2SHUDV\RQ JUXEX /RMLVWLN SDNHWOHPH N
- 7DQ W P JUXEX 6Ó]FÙOÙN HGLOPHVL VRV\DO
- 0DOL L OHU JUXEX 0DOL GHQHWLPOHULQ \DS
- +XNXNL L OHU JUXEX <DVDO NRQXODU Q WDI
- *ÓQÙOOÙ LOL NLOHUL JUXEX 7HPL] +DVDW H
  YDUVD GX\XUXVXQXQ \DS OPDV VDW GÙNN
  JÓUÙ PHOHU \DS OPDV
- ' LOL NLOHU JUXEX 'LùHU J GD DùODU \
  JÓUÙ PHOHU \DS OPDV

%H LNWD .RRSHUDWLIL KHUNHVH DÄ N ÓUJÙW
EDKVHWPL WLU *ÓQÙOOHU YH 0XWIDN HNLEL
RODUDN JHUÄHNOH WLUGLNOHUL WRSODQW OD
GH VRUXPOXODU G U *Ó]WHSH YH <HU'HQL] .RP

VDKLSWLU +HU LNLVL GH KDIWDGD ELU JÙQ G
NDUDUODU EX WRSODQW ODUGD JÓUÙ ELUOLù
NRRUGLQH HWPHN LÄLQ ÙUÙQ ÙUHWLFL LOHWL
DOW ÄDO PD ELULPOHUL EXOXQGXùXQX YH GÙ
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ED ODU JÙQGHPOHU YH SUDWLN L OHU WRSO
WRSDUODQDUDN JUXSOD SD\OD O U 7RSODQW
LOHUOH\L \ÓQWHPOHULQH GDLU NDUDUODU K
ELULPOHULQ LOHUOH\L LQLQ ELOJLOHQGLUPHO
ÓQHP V UDODPDV QD JÓUH JÓUÙ ÙOÙU YH NR
7RSODQW QRWODU WÙP JUXSOD SD\OD ODUDN
SODQODPDODU \DSPDN J GD G QGD IDUNO ÄD
GD\DQ PDP] LÄ KXNXNXPX]X VDùODPOD W U F
GÓQHPVHO LKWL\DÄODU P]D EDùO RODUDN NR
WRSODQW ODU GÙ]HQOL\RUX]r HNOLQGH \DS O

s ¹UHWLFL VHÄLPL ¹UHWLFL LOH LOHWL LP

7ÙP ÓUJÙWOHQPHOHU WDUDI QGDQ ÙUHWLFLOH
RODUDN JÓUÙOPHNWHGLU YH RQODU ROPDGD
ROPDG ù EHOLUqÓLHOPLWLOH SHUGHQLDYUDP Q
ELUOLNWH ÓUJÙWOHPH SHUVSHNWLßHUL GRùU
WDVODU Q VRUXQODU Q RUWDNOD W UDQ GD
JÓUGÙEHUUQLrL WLU

¹UHWLFL VHÄLPOHULQL ED] ÓUJÙWOHQPHOHU
ED] ODU EXQD HN RODUDN NHQGLOHULQH ÙUÙQ
DOPDNWDG U %X VHÄLPOHULQ EHOLUOL NULWH

*ÓUÙ PH \DS ODQODU Q WDPDP ÙUHWLFLQLQ
GLNNDWH DODUDN HNRORMLN ÙUHWLP \DSPDV
EHNOHPHNWHGLU %X ÙUHWLFLOHU LÄLQGH LV
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KD] UODP ROGXùX ELU EÓOJH NDON QPD SODQ
ÓQFH EÓOJH YH R EÓOJHGHNL ÙUÙQOHU EHOLUO
VRQUD WÙNHWLFLQLQ LKWL\DF WDOHEL GRùUXO
NÓ\OÙ NÙÄÙN ÙUHWLFLOHUOH LOHWL LPH JHÄL

Ó\OH EHOqL³QWHHNWHGLKDN PÙFDGHOHVL VÙUG
LPHFH HYOHUL 0DUPDULV PDJQH]\XP PDGHQLC
PDGHQLQH GLUHQHQ NÓ\OÙOHU +(6 NDU W N
ROPD\ ÓQFHOLN EHOLUOHGLN 'RùDV Q VX\XQ
\HUOH GDKD JÙÄOÙ EDù NXUPDV Q YH NÓ\ÙQÙ
GÙ ÙQÙ\RUX] %ÙWÙQ WHGDULNÄL NÓ\OÙOHULP
GD\DQ PD LÄHULVLQGH ROPO\ GRùUX EXOX\RU

.RRSHUDWLßHULQ YH WRSOXOXNODU Q ÙUHWL
ÙUHWLFLOHULQ ÄRN \ÙNVHN ELU RUDQ N UVDC
ÙUHWLP \DSPDNWDG U *Ó]WHSH .RRSHUDWLLL
0XùOD]PLU %XUVD 7XQFHOL 7UDE]RQ %LU
0DUPDULV .RQ\D ¤DWDOFD $UWYLQ 2UGX $
Dù Q Q EXOXQPDV EX GXUXPX NDQ WODPDNWD

s 7ÙNHWLFL 7ÙUHWLFL NDW O P ¹UHWLFL 7ÙN

³UJÙWOHQPHOHULQ ÙUHWLFL YH WÙNHWLFL\L E
DUDV QGD ELU NÓSUÙ QLWHOLùLQGH NRQXPODC
YH WÙNHWLFL DUDV QGD NHQGLLQL ÙUHWHWLFLQLC
EL]]DW NHQGLVL\L]r RUWDN \DQ W DO QP W U
JÓUHYLQGHQ ÓWH ÙUHWLFL YH WÙNHWLFLQLQ
VDùOD\DQ RUJDQL]DV\RQ \DS ODU ROGXùXQX J
3HWULQL WDUDI QGDQqJ]DVQGDU VDKLSWÄUHDQL
LÄLQH NDW OG ù ÄLIWÄLQLQ VRUXQODU Q IDU
\HQL ELUrLQLWDLQEPÄDPDNWDG U $\GHPLU

*Ó]WHSH .RRSHUDWLIL ÙUHWLFLOHULQL EL]]D
ROPDNWDG U *ÙYHQH GD\DO GÙUÙVWOÙN \DN
ÓùUHQPH VÙUHFLQL JHOL WLUHQ .DW O PF 2QD
ELOJL\L KHP GH GHQHWLPL \DWD\ RODUDN SD\
VLVWHPL NXOODQDFDQ EÙ\ÙN HQERX] VLVWHP VD\HVLQ
ELUELULPL]L GÓQÙ WÙUHFHùLPL] ELU LOL NL
ELOPHN N UVDOGDNL JÙQFHO ÙUHWLP NDSDVL
ÓUWÙ WÙUHELOPHQLQ \ROODU Q DUD W UPDP
LKWL\DÄODU P] YH LPN¿QODU P] Ù]HULQGHQ
HGHUHN JHUÄHNOH WLUPHQLQ NOOHQ EHKLSWE
WÙNHWLFL LOL NLOHULQLQ QDV O JHOL WLùLQL

%¹.223 ÙUHWLFLOHULQLQ \HUHO NR XOODU Q
DNWDUG ù LOHWL LP PHNDQL]PDV LOH ÙUHV

¤HNLUGHN 7ÙUHWLFL :KDWVDSS JUXEXQGD WÙ
SD\OD W ù QGDQ YH EX GD SD\GD ODU Q NHQGL
JUXEXQ SDUÄDV RODUDN JÓUPHOHULQL VDùOD
LVH \ O QGD ELU ÄLOHN ÙUHWLFLVLQLQ P
WÙNHWLFLOHULQ LVH NHQGL LQLVL\DWLßHUL G
ÓUQHNOHPL WLU

s .RRSHUDWLILQ 7RSOXOXùXQ ÙUHWLFL\H YH \H

<HU'HQL] Ó]HOOLNOH VWDQEXOpGD \D\J QOD
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\HQL YH XOD DPD\DFDNODU ELU NDQDO DÄW N
QRNWDV Q NDOLWHOL ÙUÙQH VDKLS DQFDN S
DùODU QD XOD DPDP ÙUHWLFL\L GHVWHNOHPH
HWPHNWHGLU ³UJÙWOHQPHOHU VD\HVLQGH SD
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%¹.223 ÙUHWLFLOHULQ SL\DVD\D ÙUÙQ YHUGLN
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YH NRRSHUDWLI JLUL LPOHUL VD\HVLQGH ÄRùX
DODELOGLùLQL LIDGH HWPL WLU ¹UHWLFLQLQ
EXODELOGLùLQGHQ \ROD Ä N ODUDN EX VLVWHI
V UD WDU PVDO ÙUHWLPLQ GHYDPO O ù Q VDùC
VÓ\OHQHELOLU

%X GXUXPX NDQ WOD\DFDN GLùHU X\JXODPDOD
EHQLPVHGLùL HWNL \DW U P LPSDFW LQYHVWP
NDQDOODU QGDQ ELULQL ROX WXUDQ 'D\DQ PD
ÙUHWLFLOHUL LOH WÙNHWLFLOHU DUDV QGD E
SODQOD\DELOPH DQV WDQ UNHQ YH ÙUÙQÙQH
ILQDQVÖUHQJWLFLQLQ NUHGL ÄHNPHVLQLQ YH EDQ
VXQPDNWDG U

*Ó]WHSH .RÇUHWDLFLOHULQ EXOXQGXùX \H
NHQWWH DQODW \RU VRQ NXODQ F LOH EXOX
VDùO \RU %Ó\OH ELU DOWHUQDWLI NDQDO LOH
JHÄLPOLN ÙFUHWLQL ND]DQDELOHFHùL ELU GD
ÙUHWLFLOHUH NDWN ODU Q RUWD\D NR\PDNWD

%H LNWD .RRSHUDWLILQLQ X\JXODG ù ÙUÙQ
NXOODQG ù .DW O PF 2QD\ 6HUWLILNDV\RQ
QXPXQHOHULQL NHQGL LPN¿QODU \OD DQDOL]
ÓGHPH \DSPDNWDQ NXUWDUPDNWD YH PDOL\HV
ÙUHWLFLOHULQ ORMLVWLN PDOL\HWOHUL ÓUJÙ
ROGXùX JLEL UDI EHGHOL X\JXODPDV EXOXQPD

.RRSHUDWLI YH J GD WRSOXOXNODU Q Q ÙUHWL
HNRORMLN X\JXODPDODU NDWPD GHùHU DUW
ELOLQÄOL YH NDOLWHOL ÙUHWLP \DSPDODU Q
ÙUHWLFLOHUH \ÓQHOLN ELOJL ELULNLP SD]D
ÙUHWLFLOHUOH \HUHOGH \D DG NODU \D D\DEL
QDNOL\HGH \D DQDQ JHFLNPHOHU YH\D HQHUM
ELUOLNWH GÙ ÙQGÙNOHUL YH ÄÓ]ÙP JHOL WLU
JHOL LPLQH NDWN VDùODPDNWDG U %XQD HN
ÓUJÙWOHQPHOHUL NRRSHUDWLßH PHOHUL Ó]HC

7HPL] +DVDW %ÓOJH .DON QPD 3ODQ VD\HVLQ
GD %¹.223 ÙUHWLFLOHUL YDV WDV \OD PRGHOL
\ÓQWHPOHULQH JHÄL LQL WH YLN HWWLùLQL E
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s .RRSHUDWLILQ 7RSOXOXùXQ 6ÙUGÙUÙOHLOL

%¹.223 NRRSHUDWLILQ VÙUGÙUÙOHLOLLOLOLù
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7HPL] +DVDW WÙ]HO ELU NL LOLN ROPDV Q Q V
EÓ\OHOLNOH KHP NHQGL LÄLQGH KHP NXUXPV
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WDQ PODPDODU Q Q \DS OPDV Q Q GD NRRSHU
VÓ\OHPL WLU

%H LNWD .RRSHUDWLIL NRRSHUDWLßHU DUDV
\DQV WW NODU NDWN SD\ Q Q YH D\GD
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LÄLQ QDV O ELU \RO L]OHPHOHUL JHUHNWLùLQL
ÓQHPOL ROGXùXQX LIDGH HWPL WLU $\Q]DP
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¤HNLUGHN 7ÙUHWLFL LÄLQ VÙUGÙUÙOHELOLU
JÓVWHUPHN YH NXUJX\X HVQHN WXWPDNWDQ JH
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ELU DU LYOHULQLQ ROPDV YH LOHUL\H \ÓQHO
GÓQHPOLN VWUDWHML WRSODQW ODU \DSPDODU
DOPD\D ÄDO PDODU GD VÙUGÙUÙOHELOLUOLùL

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JHQL OHWPHVLQL SD]DUODPD NDELOL\HWLQL D
GHVWHùH LKWL\DF RODQ IDUNO ÙUHWLFLOHU
]DPDQGD EX ÙUHWLFLOHULQ ED DU \D XOD PD
.DG Q .RRSHUDWLILQGH ROGXùX JLEL WRSOXP
YH \HQL ÙUHWLFLOHULQ VLVWHPH NDW OPDV Q
VÙUGÙUÙOHELOLUOLùL VÓ] NRQXVX RODFDNW U

s $NWÓUOHU DUDV LOHWL LP NRRUGLQDV\RQ
\ÓQHWLPOHU YH RWRULWHOHU LOH YE

³]HOLNOH \HQL NXUXODQ J GD WRSOXOXNODU
.DG NÓ\ ¤LIWÄL VHQ YH %¹.223pXQ RUWDN ÄL
VÙUHÄ LÄLQGH GHQH\LPOHULQGHQ \DUDUODQDI
KDOLQGHGLUOHU L ÓùUHQLS YH JHOL WLULS
LOHWL LP GHYDP HWPHNWHGLU %ÙWÙQ NRRSI
:KDWVDSS JUXEX EX HWNLOH LP LÄLQ HQ ÓQHP
ÙUÙQ DO PODU YH ELUELUOHUL DUDV QGD DO
YH KHUKDQJL ELU VRUXQOD NDU QDRQXGÙUQRU
ROGXùXQGD WRSODQW ODU \DS \RUX] ED]HQ E
PHUFLPHN YE ÙUHWLFLQLQ HOLQGH WRSWDQ
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YH\D GDKD X]XQ VROXNOX NDPSDQ\DODU YHVL
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ELOJLOHUL SD\OD PDNWDQ PHY]XDW UXKVDW
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NXPEDUDV GD ROX WXUPX ODUG U <HU'HQL] \D
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*Ó]WHSH YH <HU'HQL] .RRSHUDWLßHULQLQ GLù
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ÄDO PDODU G U ¤HNLUGHN 7ÙUHWLFL GH WÙ
XOD W NÄD ÙUHWLFL VD\ ODU Q DUW UDELOGL

*ÓUÙ PHOHUGH 7HPL] +DVDW \HUHO \ÓQHWLPOH
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EHOLUWPL WLU .DG NÓ\ .HQW .RQVH\L * GD ¤DÇ
YH <HU'HQL] \HUHO \ÓQHWLPOH LOHWL LPL ROD
NRP XOXN LOL NLVL Ù]HULQGHQ ELUÄRN ÄDO I
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DOPDNWDG U

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WHPL] JÙYHQLOLU ÙUHWLP \DSDQ ÙUHWLFLOHU

s %HOLUWLOHQ HNVLNOLNOHU ÓQHULOHU

*Ó]WHSH .RRSHUDWLIL J GD WRSOXOXNODU Q
HNLOGH V UDODP W U D .HQWWHNL WÙNHWL
GÙ ÙN ELOLQÄ GÙ]H\L E %X ELOLQFLQ ROGXùX
F %Ù\ÙN PDUNHW]LQFLUOHULQLQ KHP ÙUHWLF
ELÄLPGH VÓPÙUPHVL G ¹UHWLFLOHULQ DUWDQ

SROLWLNDODU Q Q EXQD ELU ÄÓ]ÙP JHWLUPHPH
6X\XQ KDYDQ Q YH WRSUDù Q NLUOHQPHVL J
K ¤LIWÄLOHULQ NHQGL WRSUDNODU QGD L ÄL
ELU HNLOGH ÄRùDO UVD ÙUHWLFLOHULQ ÙUHW
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VRUXQODUD GLNNDW ÄHNPHN RODUDN JÓVWHUP

%¹.223 NRRSHUDWLÄLOLN \DVDV Q Q HVNL EL
JÙWPH\HQ NRRSHUDWLßHUH X\JXQ ROPDG ù QD
DOW\DS \OD LOJLOL SHN ÄRN NRQXGD HNVLN E
GDKD NROD\ DQOD\DELOPHN LÄLQ KXNXNL GHVV
ROGXùXQX EHOLUWPHNWHGLU <HUHO \ÓQHWLP
SD\OD P Q Q ROPDV Q ÄÓ]ÙP RODUDN VXQPDN
KDNN QGD GHULQGHQ NX NX LÄLQGH ROGXùXQX
IDUNO ELU VRUXQD L DUHW HWPHNWHGLU %¹.
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ROGXùXQXQ DOW Q ÄL]PHNWHGLU

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NRRSHUDWLßHULQGHNL KHU ÙUHWLFLQLQ HPHN
ELUÄRN NRQX ED O ù Q Q EXOXQGXùXQX GD HNG

7HPL] +DVDW ÓUJÙWOHQPHOHULQ ÙUÙQÙ DQDO
ÄRN PDVUDß ROGXùXQGDQ EDKVHWPHNWHGLU
WHNQLN DOW\DS Q Q JHOL WLULOPHVLQL EXQ
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&29,' SDQGHPLVLQLQ J GD\D HUL LPL GDKD
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WDPDP Q Q EX VÙUHÄ ER\XQFD VDW ODU Q Q D
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ELU GÓQÙP QRNWDV QD L DUHW HWPHNWH YH
JHUHNVLQLPL RUWD\D NR\PDNWDG U 6Ó] NRQXV
\D\J QOD W U OPDV YH EX VD\HGH \HUHO J GD
I UVDW VXQPDNWDG U %Ó\OHOLNOH NUL] DQ
J GD VLVWHPOHUL LOH J GD YH J GD\D HUL LP

ÓUJÙWOHQPHOHULQ KHP ÙUHWLFL KHP GH WÙN
ID]OD ID\GD VDùODPDV LÄLQ ELU WDN P SROLW
JHUHNOLOLùL JÓUÙ PHOHUGH RUWD\D Ä NP W

s ³UJÙWOHQPH PRGHOL

7ÙUNL\HpGH J GD ÓUJÙWOHQPHOHULQLQ IDDOL
NL LOLN qWÙNHWLFL NRRSHUDWLLrGLU ³]HOO
ID]OD ÙUHWLFL YH WÙNHWLFL\H XOD PDN LÄLQ
KLEH EXOPDODU Q NROD\OD W UPDNWDG U

+HU ELU ÓUJÙWOHQPHQLQ VDKLS ROGXùX RUJ
KL]PHW YHUGLùL \HUHO GLQDPLNOHU EDùODP Q
KHP NHQGL \HUHO ÄHYUHVL GLùHU ELU GH\L
LOHWL LPGH ROGXNODU ÙUHWLFL ÄHYUHVL G
ROXPOX HWNLOHUL YH ED DU ODU Ù]HULQGHQ
WHPHOGH ÙUHWLPLQ GHYDPO O ù LOH L OH\HP
RODUDN HNRQRPLN DÄ GDQ GHVWHNOHQHUHN
QRNWDV Q ROX WXUPDNWDG U $QFDN %¹.223
ED QD ELU J GD ÓUJÙWOHQPHVLQLQ EÙWÙQ Ù
EX ÓUJÙWOHQPHOHULQ ELU EÙWÙQ RODUDN \
ÓUJÙWOHQPHOHU DUDV QGD LOHWL LPLQ GHYD
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HNLO 'D\DQ PD NRRSHUDWLßHUL RODUDN
KHGHIH XOD PDN LÄLQ H LWOLN VÙUGÙUÙOHE
SD\GD O \DS V JHUHùL IDDOL\HWWHQ HWNLOH
.RVWDNLV 6Ó] NRQXVX PRGHOGH IDUNO
\HULQH RUJDQL]DV\RQXQ RUWDN KHGHßHULQL
DNWÓUOHU DUDV QGD X]OD PD ROX WXUXOPDV
ROX WXUDELOPHNWHGLU /HYLWHQ 5HLG YH)DL

* GD ÓUJÙWOHQPHOHULQL ELUOH WLUHQ ÙVW Ó
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HGHELOPH\L PÙPNÙQ N ODFDNW U %X VD\HGH
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VRV\DO Dù YH ELOJL GHQH\LP WDNDV QD GD\D
ÓUJÙWOHQPHOHULQL ÙUHWLFLOHUL ÙUHWLFL N
VÙUHFH NDW O PODU Q VDùOD\DQ ÓQHPOL ELU
VHUWLILNDV\RQ VLVWHPLQH DOWHUQDWLI ROD
DUDV QGDNL ELOJL YH GHQH\LP SD\OD P QD LP
\HQLGHQ ELU GHùHU DWIHWPHNWH VRV\DO EÙW
JHOL LPL GHVWHNOHPHNWHGLU

s 'LùHU DNWÓUOHU DUDV LOHWL LP NRRUGLQ

* GD ÓUJÙWOHQPHOHULQLQ JÙÄ ND]DQPDV YH
XOD PDV LÄLQ \HUHO \ÓQHWLPOHULQ VLVWHP L
VÙUHFL \HUHO \ÓQHWLPOHULQ YH GHYOHW DNO
GÓQHFHNOHULQLQ L DUHWOHULQL JÓVWHUPH\H

* GD ÓUJÙWOHQPHVLQLQ KL]PHW YHUGLùL \HU
WDNLS HWPH\H \ÓQHOLN VÓ] NRQXVX ÓUJÙWOH
IDDOL\HWOHULQL GX\XUPDV YH EÓOJH QÙIXVXQ
DUW U OPDV QD \ÓQHOLN NDPSDQ\DODU JHUÄHN
VDùOD\DFDNW U $\Q]DPDQGD WRSODQPD PHN
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NROD\OD W UDELOHFHN KHP GH YHULOHQ KL]PH
WH YLN HWPH\H GH \DUG PF RODFDNW U 7ÙP
ED ODU QD \HUHO J GD HNRQRPLVL \DUDW P JÙ
ELU JÙÄ LOH \HUHO J GD HNRQRPLOHULQLQ RO

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VX\XQDr LKWL\DF RODQ ÙUHWLFLOHUL EXOPD\

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IDDOL\HWOHUL KDNN QGD IDUN QGDO N \DUDWP

*ÓUÙ PH \DS ODQ WÙP NDW O PF ODU Q EHOLUW
KHGHßHQPHNWHGLU %X VD\HGH ÙUHWLFLOHU Ù
NRQXODU QGD \D DG NODU VRUXQODUD RUWDN
DUDODU QGD X]PDQOD PDODU EHOLUOH\HUHN
YH NDPX RWRULWHOHULQGHQ WDOHS HWWLNO
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I UVDW \DUDWDELOHFHNOHUGLU <HU'HQL] YH *
GRùUXOWXVXQGD EHOLUWWLNOHUL JLEL ÙUHW

\HUHO J GD HNRQRPLOHULQLQ JÙÄOHQPHVLQL

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LOH L ELUOLùL ÙUÙQÙQ WRSUDù Q WRKXPXQ
DOW\DS \ VXQDFNW U %Ó\OHOLNOH GDKD ND

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J GD ÓUJÙWOHQPHOHUL YH \HUHO \ÓQHWLPOH
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YE \ÓQHOLN GÙ]HQOHGLùL HùLWLPOHU \HUHO
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JHOL WLULOHFHN GD\DQ PD SURMHOHUL LOH G
LÄLQ GH VDùO NO J GD\D HUL LP I UVDW \DU
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6RQXÄ

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ÓUJÙWOHQPHOHUL

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ÙUHWLP \DSPDODU Q WH YLN HGHUHN YH ÙU
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$GLO WHPL] YH XOD ODELOLU J GD\D HUL P

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ROPDNWDG U

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PÙPNÙQ RODFDNW U %X \DS \D \HUHO \ÓQHWL
LOJLOL NXUXP YH NXUXOX ODU Q ÙQLYHUVLW
JÙÄOHQPHVLQL YH \D\J Q HWNLOHULQLQ DUWPD

VWDQEXOpGD YH KDWWD 7ÙUNL\HpGH EX ROX XI
GÙ ÙQÙOGÙùÙQGH JHOHFHN LÄLQ ÓQHPOL ELU
ROGXNODU VÓ\OHQHELOLU $UD W UPD J GD Ó
HWNLVL\OH WRSOXPXQ GÓQÙ ÙPÙQH LOL NLQ W
\HUHO SROLWLND JHOL WLUPH VÙUHÄOHULQH N
GD EHOLUWWLùLPL] Ù]HUH SHN ÄRN IDUNO ER\
ÄDO PDODU Q ÄH LWOHQHELOHFHùLQL JÓVWHU
V UDODQDQ KHU ELU PDGGH IDUNO ELU DUD W
\DS ODU Q Q J GD VLVWHPOHULQL D\Q EÓOJH
WDQ P Q Q ÓOÄHùLQL \HQLGHQ GÙ ÙQGÙUPHVL
DUD W UPD\D GHùHU ELU NRQX RODUDN JÓUÙOP

%LOJL QRWX

%X ÄDO PD 7¹ HKLU YH %ÓOJH 3ODQODPD
*HOL PH 3ROLWLNDODU YH 3ODQODPDV GHU
ÙUHWLOPL WLU

&29,' SDQGHPLVLQLQ LGGHWOHQGLùL GÓQ
VXQDQ WÙNHWLFL NRRSHUDWLßHULQH YH J G

.D\QDNODU

$EDWH * /RFDO)RRG (FRQRPLHV 'ULYLQJ)RUFHV &KDO
(QYLURQPHQWDO 1XWULWLRQ

$QGUHWWD 0 *XLGL 5 3ROLWLFDO &RQVXPHULVP DQG
3HUVSHFWLYH" 3$&2

$\GHPLU * 7ÙNHQHQ %LU 'ÙQ\DGD 7ÙUHWLFL 2OPDN (NRO

%DXZHQV 0 .RVWDNLV 9)URP WKH &RPPXQLVP RI &DS
&R RSHUDWLYLVP 7ULSOH&

%HQWRQ 7 &UDZIRUG - 'RKHUW\ %)DVWRVR) -LPHQ] +
)RRG :KDW 5RLH 6KRXOG 8.)RRG 3URGXFHUV KDYH LQ)HHGLQJ V

%OD\ 3DPHU $ 5 &DUH\ (9DOHWWH 0 6DQGHUVRQ
7UDQVIRUPDWLRQ $JULFXOWXUH DQG +XPDQ 9DOXHV t

%R]OX % *ÙUHU * * GD 7RSOXOXNODU ¹]HULQH 6RV\RO
¤DN OF (G $QWDO\D .LWDE $QWDO\DpGD 'RùD YH 0HGHQL\HW

&DUVRQ 5 $ +DPHO = *LDUURFFR . %D\ORU 5 0DWKHZV
IDUPHUVp PDUNHWV $JULFXOWXUH DQG +XPDQ 9DOXHV t

&ODSS - 0RVHOH\ : * 7KLV IRRG FULVLV LV GLIIHUHQW
RUGHU 7KH -RXUQDO RI 3HDVDQW 6WXGLHV

&KULVWHQVHQ % 3KLOOLSV 5 /RFDO IRRG V\VWHPV DQ
WKHRU\ &RPPXQLW\ 'HYHORSPHQW t

&RQQHOO\ 6 0DUN\ 6 5RVHODQG 0 %ULGJLQJ VXVWD
WUDQVIRUPDWLRQ WKURXJK ORFDO IRRG LQLWLDWLYHV &ULWLFD

¤HOLN = * GD 7RSOXOXNODU YH $UDF V] ¹UÙQ $ù $QDOL

'HOOHU 6 & /DPLH ' 6WLFNHO 0 /RFDO IRRGV V\VWHP
'HYHORSPHQW

(VSHOW 5 3HÎD /ÐSH] , 5RGUÊJXH] (qœ(FRQRPÊD DO
FRRSHUDWLYR GH SURGXFWRV DJURHFROÐJLFRVr &,5,(& (VSDÎD

)6,1 DQG *OREDO 1HWZRUN $JDLQVW)RRG &ULVHV *OREDO
&29,' 5RRWWSV ZZZ IVLQSODWIRUP RUJ VLWHV GHIDXOW ILOHV
SGI

*RRGPDQ ' o7KH 4XDOLW\ q7XUQr DQG $OWHUQDWLYH)RRG
t

*UHHQSHDFH $NGHQL] 7ÙUNL\HpQLQ * GD 6LVWHPL YH VW
<KWWSV VWRUDJH JRRJOHDSLV FRP SODQHW WXUNH\ VWDWHO
WDU & % P VLVWHPL UDSRU SGI! (UL LP 2FDN

.DKLOXRWR +)RRG 6\VWHPV)RU 5HVLOLHQW)XWXUHV)R

.DUDND\D ($JUR)RRG 6\VWHP 7UDQVLWLRQV" ([SORULQJ
7H]L]PLU <ÙNVHN 7HNQRORML (QVWLWÙVÙ 0ÙKHQGLVOLN YH)

.DWFKRYD $ / :RRGV 7 $ 7KH (IIHFWLYHQHVV RI /RFD
$JULFXOWXUDO DQG $SSOLHG (FRQRPLFV $VVRFLDWLRQ $

. O Ä $ & .HQWVHO 7DU P YH * GD 7RSOXOXNODU Q .HQW
NHQWVHO WDULPL YH JLGD WROOXOXN QLUL LP 2EDV NHQWVHO PXKDOH

.XUWVDO < 9LDJJL ' ([SORULQJ &ROODERUDWLRQ DQG
&RQVWUDLQWV 3UHYHQWLQJ $FWLYH 3DUWLFLSDWLRQ 7KH &DVH

/DPLH 5 ' 'XQQLQJ 5 %HQGIHOGW (/HOHNDFV - 0 9HODQ
6RXWK $ FDOO IRU D FROODERUDWLYH DSSURDFK WR DVVHVVPH

/HYLWHQ 5HLG &)DLUEDLUQ % 0XOWL VWDNHKROGHU
)UDPHZRUN IRU 5HVHDUFK" &DQDGLDQ -RXUQDO RI 1RQSURILW D

0DUVGHQ 7 7KHRUL]LQJ IRRG TXDOLW\ VRPH NH\ LVVXHV L
,Q +DUYH\ 0 0F0HHNLQ $:DUG $ 'HU 4XDOLWLHV RI)RRG

0HN¿QGD $GDOHW 'HUQHùL 0HN¿QGD $GDOHW YH * GD %H

0F)DGGHQ ' 7 &RQQHU ' 'HOOHU 6 +XJKHV ' 0HWHU . 0F
IRRG V\VWHPV $ WRRQLW WR JXLGH FRPPXQLW\ GLVFXVVLRQ\
$JULFXOWXUDO 0DUNHWLQJ 6HUYLFH

0F.LEEHQ % 'HHS (FRQRP\ 7KH :HDOWK RI &RPPXQLWLHV

1RUEHUJ +RGJH + 0HUULILHOG 7 *RUHOFN 6 %ULQJ
(FRQRPLF %HQHILWV RI ORFDO IRRG ,6(& ,QWHUQDWLRQDO 6RF

³]GHQ) 'RùDGDQ 7ÙNHWLFL\H 7DU PGD .DSLWDOVW 7DKD
¹]HULQH 3UDNVLV

3LQFKRW $ 7KH (FRQRPLFV RI /RFDO)RRG 6\VWHPV $ /L
&RQVXPSWLRQ RI /RFDO)RRG 8QLYHUVLW\ RI 0LQQHVRWD

5DNRSXORV 7 5HVSRQGLQJ WR WKH FULVLV IRRG FR RSH
6RXWKHUQ $IULFD

5RVV - 7KH 2ULJLQV RI &RPPXQLW\ 6XSSRUWHG $JULFXO
FRPPXQLW\ VXSSRUWHG DJULFXOWXUH FVD

5HQWLQJ + 0DUVGHQ 7. %DQNV - 8QGHUVWDQGLQJ D
VXSSO\ FKDLQV LQ UXUDO GHYHORSPHQW (QYLURQPHQW DQG 3O

6FKXOVFKHQN - %HQHILWV DQG OLPLWDWLRQV RI ORFDO I
6WXG\ <ÙNVHN /LVDQV 7H]L 6WHOOHQERVFK 8QLYHUVLW\ 6FK

6FKPLGW 3 'XEUDYN¾ -)URP)DUP WR)RUN $ 6XVWD
(FRQRPLF DQG 6RFLDO &RPPLWWHH

6H\IDQ * 6PLWK $ *UDVVURRWV LQQRYDWLRQV IRU VXV
DJHQGD (QYLURQPHQWDO 3ROLWLFV

6YHQVVRQ 6 %DORJK 3 &DUWZULJKW $ 8QH[SHFWHG
RI /RFDO)RRG &RPPXQLWLHV (DVWHUQ (XURSHDQ &RXQWU\VLGH

7HOOLJPDQ $ / :RUV] 0 6/RFDO DFWLRQ &/LFDWRU RI EHHI TX
UXUDO FRQVXPHUV LQ WKH VRXWKHUQ 86)RRG 4XDOLW\ DQG 3U

7HQGDOO ' 0 -RHULQ - .RSDLQVN\ % (GZDUGV 3 6KUHFN
6\VWHP 5HVLOLHQFH 'HILQLQJ 7KH &RQFHSW *OREDO)RRG 6HFX

85/ KWWSV ZZZ HNRKDULWD RUJ HNRORML KDULWDVL ! HUL LP

85/ KWWSV ZZZ LIRDP ELR RXU ZRUN KRZ VW HQG LP WH UL
2FDN

< OG U P 8 ' 7DU PGD $OWHUQDWLI .DPXVDOO ù Q 2ODQ
$NDGHPLVL 'HUJLVL

NOLPH 8\XPOX .HQWVHO 3ODQC
6RùXN $GD OL NLOHULQLQ QFHC

(OLI *ÙOGÙ

$NGHQL] ¹QLYHUVLWHVL)HQ %LOLPOHUL (QVWLWÙV

'U ³ùU ¹\HVL ¤DùGD .X ÄX LP HN

$NGHQL] ¹QLYHUVLWHVL)HQ %LOLPOHUL (QVWLWÙV
%LOLPOHUL YH 7HNQRORMLOHUL %ÓOÙPÙ

³]HW

NOLPH X\XPOX NHQWVHO WDVDU P SODQODPD Ä
ÄÓ]ÙP VWUDWHMLVL RODUDN X\JXODQDQ HQ NRC
VRùXN DGD SRWDQVL\HOOHULQLQ GHùHUOHQGL
V FDNO ù QD VDKLS RODQ YH VHULQOHWPH JÙFU
N \ ODU YH VRNDN DùDÄODQG UPDODU NHQWVH
$QFDN NHQWVHO VRùXN DGDODU Q EÙ\ÙNOÙNOH
PRUIRORMLN Ó]HOOLNOHUL VHULQOHWPH NDSD
LNOLP NDUDNWHULVWLùLQLQ NHQGL Ó]QLWHOL
JHUHNPHNWHGLU

%X ÄDO PDGD $NGHQL] LNOLP NX Dù QGD EXOX
ÄHYUHOHULQLQ PRUIRORMLN \DS V LOH ELUOLN
IDUNO WDULKH DLW X\GX JÓUÙQWÙVÙ NXOODC
6RùXN DGDODU YH ÄHYUHOHULQGHNL NHQWVHO
LQFHOHQPL WLU 6RQXÄODU DÄ N WDVDU PD \
DODQODUD JÓUH VRùXN DGDODU Q VHULQOHWPI

$QDKWDU .HOLPHOHU .HQW LNOLPL .HQWVHO V
SODQODPD

$EVWUDFW

7KH HDVLHVW WKH OHDVW FRVWO\ DQG WKH P
VROXWLRQ VWUDWHJ\ IRU UHGXFLQJ KHDW LVO
VWXGLHV LV UHFODPDWLRQ RI WKH FRRO LVO
FRRO LVODQG SRWHQWLDOV RI WKH XUEDQ DU
FRDVWV DQG VWUHHW DIIRUHVWDWLRQV ZKL
VXUURXQGLQJV DQG KDYH FRROLQJ FDSDFLWL
WKH GHQVLW\ RI FRROLQJ IDFWRUV DQG WKH P
FRRO LVODQGV FKDQJH WKHLU FRROLQJ FDSDF
FLW\ VKRXOG EH HYDOXDWHG DQG SXW IRUZDU

,Q WKLV VWXG\ WKH FRRO LVODQG SRWHQWLD
FOLPDWH]RQH KDYH EHHQ H[DPLQHG WRJHWK
SHULSKHULHV 6XUIDFH WHPSHUDWXUH YDOXHV
VDWHOOLWH WKHUPDO LPDJHV RI GLIIHUHQW
WKH XUEDQ SDWWHUQ KDYH EHHQ DQDO\]HG E
XUEDQ IRUP ZLWK DQ RSHQ GHVLJQ EHQHILWV
WKDQ WKH DUHDV WKDW ZHUH GHVLJQHG PRUH

.H\ZRUGV 8UEDQ FOLPDWH 8UEDQ FROG LVOD
SODQQLQJ

*LUL

%XJÙQ GÙQ\D QÙIXVXQXQ pL NHQWOHUGH \D
pH XOD PDV EHNOHQPHNWHGLU 81 %X
GÙQ\D GDKD ID]OD ÄHYUH SUREOHPL\OH NDU
ÓQHPOLOHULQGHQ ELULVL GH Ó]HOOLNOH VRC
NÙUHVHO LNOLP GHùL LPLGLU .HQWOH PH QHG
DODQODU Q JHQL OHPHVL ELQD \RùXQOXùXQXQ
LNOLP GHùL LNOLùL VRQXFXQGD V FDNO NODU C
DIHWOHU LVH NHQWOHU Ù]HULQGH EDVN ROX W
0F&DUWK\ YG +XQW YH :DWNLVV

<HUHO LNOLP DUWODU X\JXQ ROGXùX VÙUHFH
RODQ LQVDQ Q \D DP NRQIRUX DÄ V QGDQ EÙ\Ù
DQWURSRMHQLN HWNLOHUH EDùO RODUDN DUV
Ä NDQ RUWDPODU LQVDQ LÄLQ ÓOÙPFÙO VRQX
GHùL LPLQLQ VRQXFX RODUDN PH\GDQD JHOHQ
DODQODU VDYXQPDV] NDOPDNWD GDKD ID]OD
\D] D\ODU QGD $YUXSDpGD \D DQDQ V FDN KD
D\ODU QGD 5XV\DpGD NL LQLQ \ O \D]
\ O \D] GÓQHPLQGH .DQDGDpGD JÙQGH NL
VDGHFH KDIWDGD NL LQLQ ÓOGÙùÙ ELOLQP
QVDQ Q LNOLPVHO NRQIRU VWDQGDUWODU
¹ONHPL]GH GH \D] D\ODU QGD Ó]HOOLNOH JÙQ
V FDNO NODUGD ÓOÙP RUDQODU Q Q DUW \RU
QLWHOHQGLULOHELOHFHN EX ROD\ODU NDU V
VWUDWHMLOHULQLQ JHOL WLULOPHVL DUW N EL
WRSRùUDI\DV Q Q PRUIRORMLN \DS V Q Q \Rù
KDWWD NHQWOLOHULQ \D DP ELÄLPOHULQLQ YH
KHU NHQWLQ NHQGLQH Ó]JÙ LNOLPVHO NDUDNW
KHU NHQWLQ NHQGL LNOLPVHO Ó]HOOLNOHULC
.X ÄX LP HN 2\VD \DS ÓOÄHùLQGHQ NHQ
\ÓQOHQGLUGLùL HNLOOHQGLUGLùL DVO QGD W
ELU ELOJL ROPX \DS ODU Q YH HKLUOHULQ V
YHUPL WLU ³UQHùLQ VRùXN LNOLP EÓOJHOHULC
LÄLQ NDO Q GXYDUO \RùXQ V YDO YH NÙÄÙN S
JÓUÙOÙUNHQ O PDQ YH V FDN LNOLP EÓOJHOH
NXOODQ OG ù YH ELQDODU DUDV PHVDIHQLQ J
\HUOHUGH QHPLQ HWNLVLQL D]DOWPDN LÄLQ E
\Dù Q Q \RùXQ ROGXùX \HUOHUGH ELUELULQH

\D]ODU Q ÄRN V FDN JHÄWLùL \HUOHUGH EÙ\ÙN
NÙÄÙN KDYX]ODU Q NXOODQ OG ù JÓUÙOPHNW
VRQUDV QGD DUWDQ NHQWOH PH\OH ELUOLNWH
GHùL WLUPL LNOLPVHO LKWL\DÄODU WD NL
NDGDU JHUL SODQD LWLOPL WLU %XJÙQ ELU W
L\LOH WLULOPHVL NRQXVX WDUW O UNHQ GL
VHEHSOHULQGHQ ELULVL RODQ NHQWOHULQ LN
ÄÓ]ÙPÙQ LVH LNOLPH X\XPOX WDVDU P SODQOD
:+2

<DS WDVDU P NHQWVHO SODQODPD YH EÓOJH
HNLO pGH Ó]HWOHQPL WLU %LWDQ

HNLO NOLPOH LOL NLOL SODQODPD WDVDU

%X ÄHUÄHYHGH VRQ \ OODUGD \DS ODQ DUD W U
D]DOWPDGD VRùXN DGD SRWDQVL\HOHULQLQ
ROPDV KHP ÄHYUH GRVWX ROPDV KHP GH NR
ELU \ÓQWHP RODUDN ÓQ SODQD Ä NDU OG ù J
YG 'X YG 0DVRXGL YH 7DQ 4LX
¤HYUHOHULQH JÓUH GDKD GÙ ÙN \Ù]H\ V FDNO
DODQODU RUPDQ DODQODU VX \Ù]H\OHUL N
ÓQHPOL VRùXN DGD SRWDQVL\HOHULGLU +RG
YG :DQJ YG 0DVRXGL YH 7DQ 5
'X YG 6RùXN DGDODU Q HWNLOHUL VRùX